BEWARD
IP SURVEILLANCE

Installation User Manual

www.beward.eu

Wi-Fi IP CAMERA
N1250

Night-vision LEDs built in
Built-in multi-zone motion detection
16 channel surveillance software included

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Chapter 1. Safety Warnings

Before using this product

This camera complies with all safety rules. However, improper use of this camera may cause fire resulting in body injury and property damage as well. Before you start to use this camera, please read and thoroughly understand the instructions in this user manual.

IMPORTANT!

Use only accessories recommended by the manufacturer. The use of improper accessories may cause hazards.

Follow the operating instructions

Do not use and store this camera in dangerous environments:

- Do not expose to extremely low or high temperatures (camera's operating temperature is 0 to +50°C)
- Do not expose to direct sunlight and do not install near any heat resources
- Do not install near water sources
- Avoid electromagnetic interference
- Do not expose to vibration

IMPORTANT!

If you experience problems with this camera, please contact your local dealer for assistance.

In case if:

- You notice a strange smell or smoke
- Any liquid has been spilled or objects have fallen into this camera
- This camera has been dropped or damaged

Do the following:

- Unplug the power cord and disconnect all cords from the camera
- Contact your local dealer or the store where you purchased this camera

Transportation

If you need to transport this camera, carefully repack it using the original box and attach protective materials.

Ventilation

Keep good ventilation in the area where the camera is installed to prevent its overheating.

Cleaning

To clean external components, use a soft, dry cloth. To remove persistent dirt, use some detergent and a soft cloth.

Do not use volatile cleaners, alcohol, benzene or other harsh solvents.

BEWARD

Chapter 2. Overview

BEWARD N1250 is a high-quality compact IP camera with a high-sensitivity CMOS sensor, a built-in Wi-Fi module and a microphone, LEDs and 10x digital zoom.

BEWARD N1250 allows watching real-time images via a web browser from anywhere in the world. You can always hear and see what is happening in your home, your office, or your cottage and even talk to your employees or relatives.

Pic. 2.1

2.1. Features

- Optimal solution concerning price and quality
- High-quality image
- Built-in LEDs (white color) for surveillance under low-light conditions
- Built-in Wi-Fi IEEE802.11b/g module
- Professional surveillance software included (16 channels)
- 1/4" CMOS image sensor
- Dual streaming: MPEG-4/M-JPEG
- Built-in microphone
- 3.5 mm audio jack for external speakers
- Two-way audio

- Viewing camera images on a mobile phone (including iPhone)
- Built-in multi-zone motion detection
- Sending of files via e-mail and to FTP

2.2. Specifications

- Compact size 63x104x35 mm
- Image sensor: 1/4'' progressive scan CMOS
- Lens: M12, f4.0 mm, F2.0 (angle of view: 48°)
- Resolution: 640x480, 320x240, 160x120
- Sensitivity: 0.5 lux @ F2.0 (0 lux when LED is on)
- Frame rate: up to 30 frames per second at any resolution
- Digital zoom: 10x
- Video encoding: MPEG-4 or MJPEG
- Built-in microphone
- Supported protocols: Bonjour, TCP/IP, DHCP, PPPoE, ARP, ICMP, FTP, SMTP, DDNS, NTP, UPnP, RTSP, RTP, RTCP, HTTP, TCP, UDP, 3GPP/ISMA RTSP
- Support for ONVIF v1.02

2.3. Package Contents

- IP camera N1250 (lens 4.0 mm pre-installed)
- Patch cord (1 m length)
- Quick installation guide
- CD with user manuals and software
- Bracket
- Power supply 5 V, 1 A
- 2 dBi Omniaerial

Chapter 3. Physical Description

3.1. Front Panel

Pic. 3.1

Focus adjustment ring: rotate the metal ring to set focus (the focus is set before shipping and does not need to be adjusted).

Network LED: lights when the camera is connected to the network and indicates network activity.

Power LED: lights when the camera powers up.

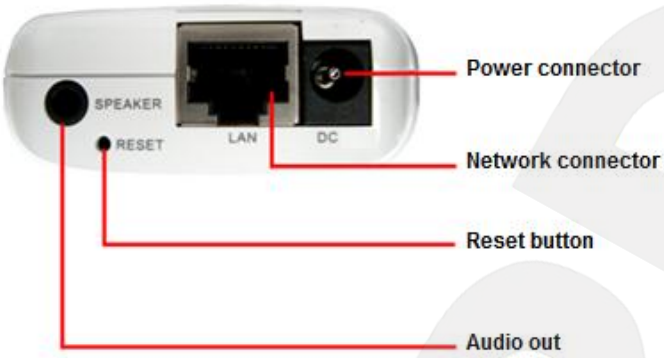
Built-in microphone: provides two-way audio when an external speaker is connected to the audio output.

IR LEDs: allow surveillance in complete darkness. The IR LEDs can be turned on or off manually or automatically based on the threshold value.

3.2. Bottom Panel

Power connector: connects the camera to 5 V DC power.

Network connector: use this port to connect to an Ethernet LAN using an RJ45 connection.



Pic. 3.2

Reset button: press this button to reset the camera to factory settings. Press and hold this button for at least 10-15 seconds to reset the camera to factory settings. If user holds this button during less than 10 seconds, the camera will reboot without reset to factory settings.

Speaker (Audio out): a line out for external speakers (e.g. earphones or speakers with a built-in amplifier).

3.3. Rear Panel

Antenna connector: an SMA connector to attach a Wi-Fi antenna.

Bracket mount: attach the supplied bracket to the camera.

Pic. 3.3

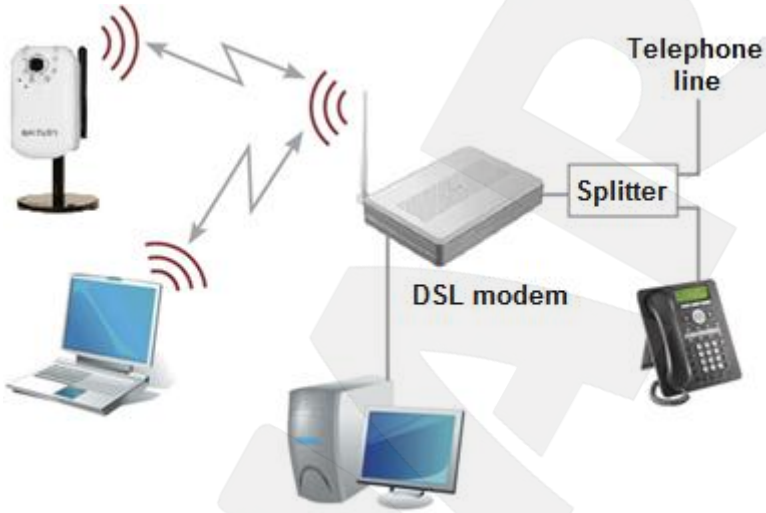
Chapter 4. Installing the Camera and Connecting a Cable

4.1. Overview of Connecting the N1250 to a Network

BEWARD N1250 supports both wired (Ethernet) and wireless connections. This camera can be connected directly to a computer or through a router, a switch, or a Wi-Fi access point.

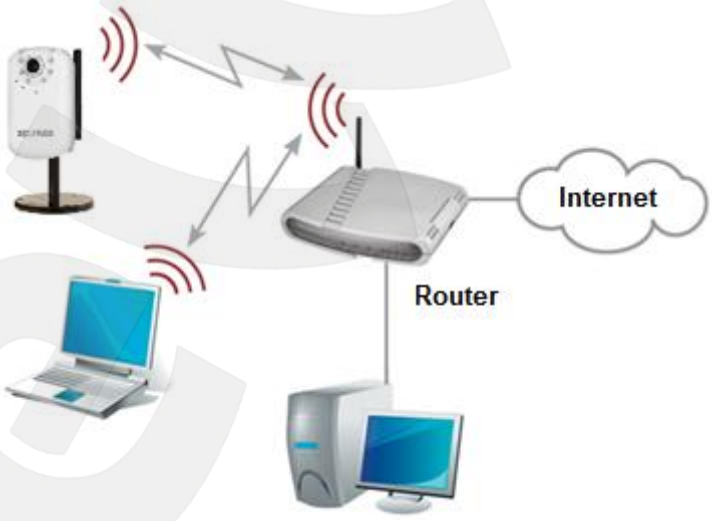
Common methods of Internet access include:

- ADSL over telephone lines (*Pic. 4.1*).



Pic. 4.1

- Ethernet leased line (*Pic. 4.2*).



Pic. 4.2

A common home router has one WAN port for Internet access and four LAN ports to connect computers, IP cameras and other devices on your local network. Besides, the router must support Wi-Fi to connect the N1250 to your wireless network.

4.2. Installation Recommendations

This section provides recommendations that should be observed when mounting and installing the N1250.

Tips on camera placement:

- This camera is designed for both indoor and outdoor surveillance. The operating temperature is down to 0 and up to +50°C.
- Do not expose this camera to direct sunlight for a long period of time. Do not install it near any heat resources.
- Incorrect installation may cause undesirable “blind spots” that are not visible to the security operator.
- Do not install this camera near water sources.
- Avoid electromagnetic interference.
- When installing the camera, take notice of possibility of laying connecting cables.
- Avoid unstable installation, which may cause vibration. This, in turn, may reduce motion detection performance and image crispness.
- Surveillance cameras should be installed so that they are inaccessible to unauthorized persons and protected enough against damage and changing of viewing direction.
- When installing the camera, you should clearly determine the viewing direction.

Tips on twisted pair cable installation:

- In corridors, electric and feeble-current cables should be installed in different conduits that are disposed on different walls.
- Twisted pair and electric cables can be installed in the same conduit using different sections of the cable that have solid longitudinal partitions with at least 0.25 h of fire resistance, which are made of non-combustible material and should be positioned in work areas at distance of 15 meters maximum if the electrical power does not exceed 5 kW.
- Electric and feeble-current cables should be placed in parallel to each other at distance of at least 50 mm in different conduits or different sections of conduit. If the electric field strength from the electric cables exceeds 3 V/m, you should increase the distance between the electric and feeble-current cables or reduce the electromagnetic noise.
- Twisted pair and electric cables should cross each other at right angles.
- Unshielded twisted pair cables should be located at distance of at least 125 mm from fluorescent gas-discharge lamps or from other high-voltage discharge devices.

- Unshielded twisted pair cables should be located at distance of at least 1.5 meters from electromagnetic interference sources that produce electric field strength exceeding 3 V/m.
- Switchboards with pinned unshielded twisted pair cables should be located at distance of at least 3 meters from electromagnetic interference sources that produce electric field strength exceeding 3 V/m.
- Entire twisted pair cables should be arranged between the points of connection so the cable run is as short as possible.
- Minimum cable bending radius is four times the cable diameter (or 1 inch=2.5 cm) or it is also acceptable to install the cable so the cable bending radius is 2 inches (5 cm).
- Maximum length of the entire segment is 100 meters.
- When connecting over Wi-Fi, take notice that the signal strength depends on many factors such as the distance to the access point, electromagnetic waves, configuration of the place where the camera is installed, etc.

4.3. Installing the Camera

Step 1: attach the bracket to the surface using 3 self-tapping screws.

Step 2: loosen the bracket screws to move the camera to the desired position.

Step 3: attach the camera to the bracket, adjust the tilt angle and fasten the camera.

4.4. Wired Connection to a Network

Step 1: provide power to the camera using the included 5 V 1 A power supply.

IMPORTANT!

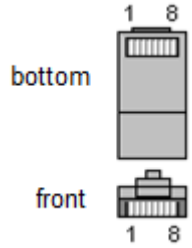
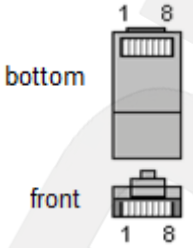
Despite the BEWARD N1250 camera offers wireless functionality, you must connect it to a local network or a computer through an Ethernet cable first. Then you must set up both the wired and wireless connections. Once they are set up, you can use the camera's wireless functionality and unplug the Ethernet cable from it.

Step 2: use the supplied RJ45 cable to connect the camera to a network (a LAN port of the router).

If needed, you can purchase a network cable separately or if you have the materials, tools and skills, you can make a network cable.

A straight RJ-45 cable (UTP category 5)

The table below shows an example of a patch cord to connect the camera to a computer or a network switch.

One end		Other end	
	1: White and orange		1: White and orange
	2: Orange		2: Orange
	3: White and green		3: White and green
	4: Blue		4: Blue
	5: White and blue		5: White and blue
	6: Green		6: Green
	7: White and brown		7: White and brown
	8: Brown		8: Brown

To make a network cable, you need the following materials: UTP category 5 cable, two RJ-45 connectors and an RJ-45 crimping tool.

Assembling the pairs of wires in the correct order (see the table above) ensures data transfer speed of 100 Mbps.

Chapter 5. Setting up the Wired Connection for Windows 7

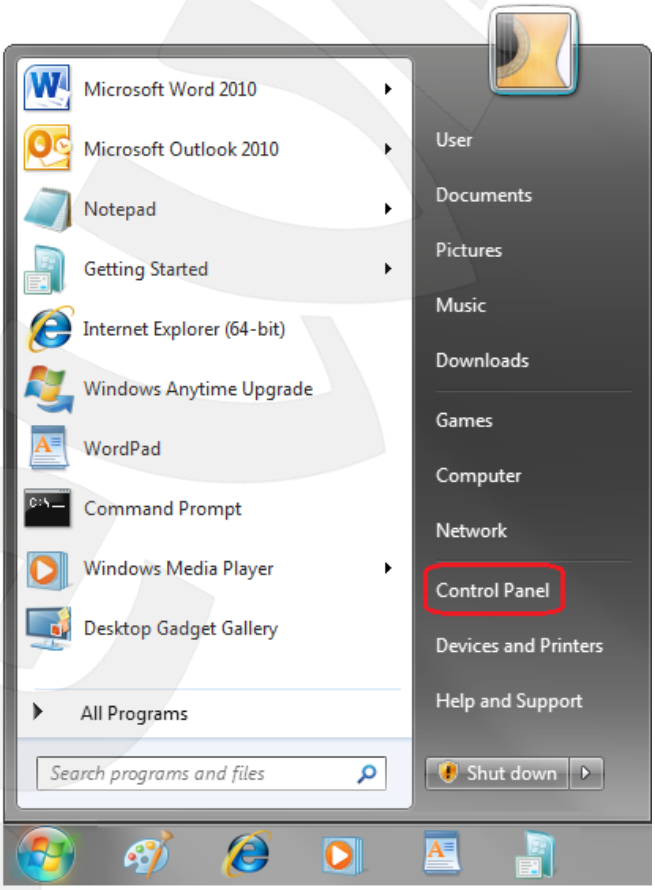
To make the N1250 IP camera work together with your computer, your laptop and other devices in a local network, you need to connect this camera to the network according to the network parameters. This chapter explains how to define the network parameters.

NOTE:
The connection establishment process is shown for Windows 7 Ultimate. Despite titles of system menus and options may differ from the titles of system menus and options that appear in other versions of Windows, the connection establishment process is universal.

5.1. Defining the Local Network Parameters

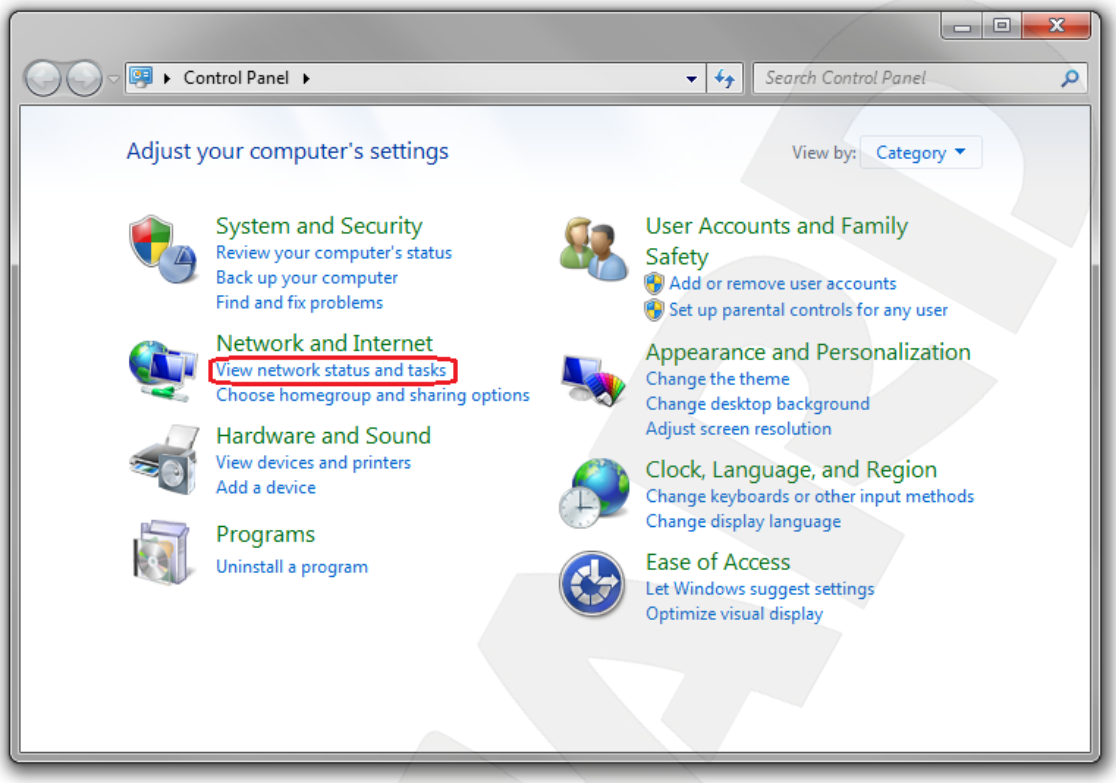
When connecting the camera using an Ethernet cable, you must define the local network parameters. When connecting this camera over Wi-Fi, you must define both the wired and wireless network parameters.

To do so, go to ***Start – Control Panel*** (*Pic. 5.1*).



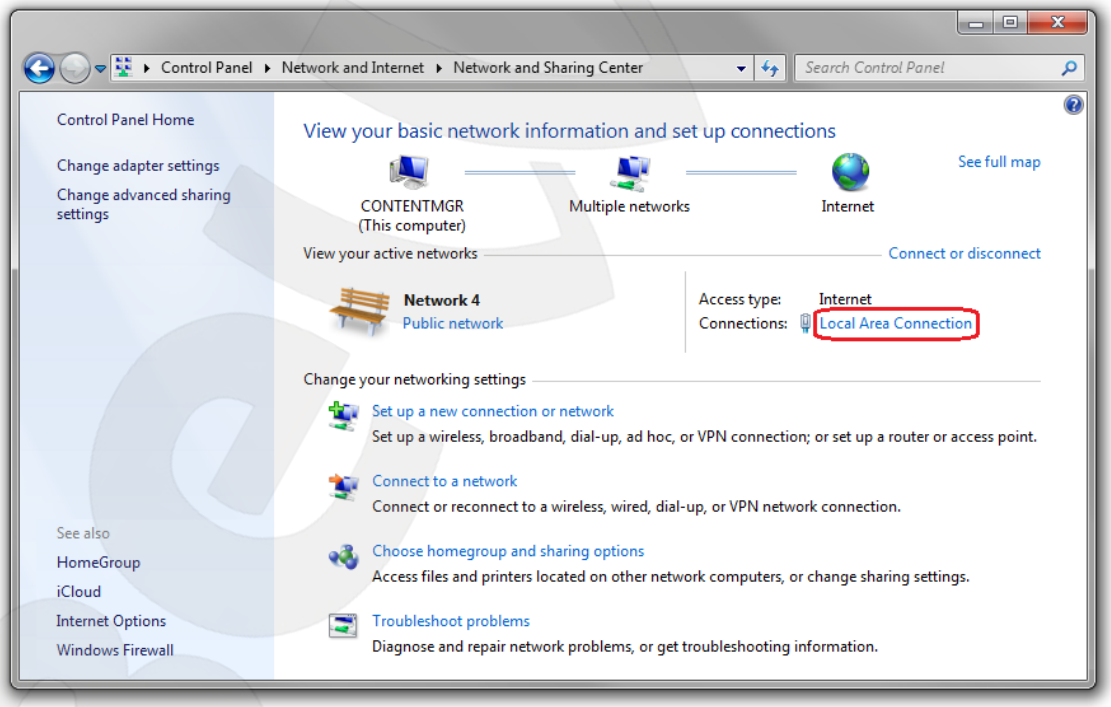
Pic. 5.1

In the opened window, click on the **[View network status and tasks]** in the **[Network and Internet]** section (*Pic. 5.2*).



Pic. 5.2

In the opened window, click on the **[Local Area Connection]** (*Pic. 5.3*).

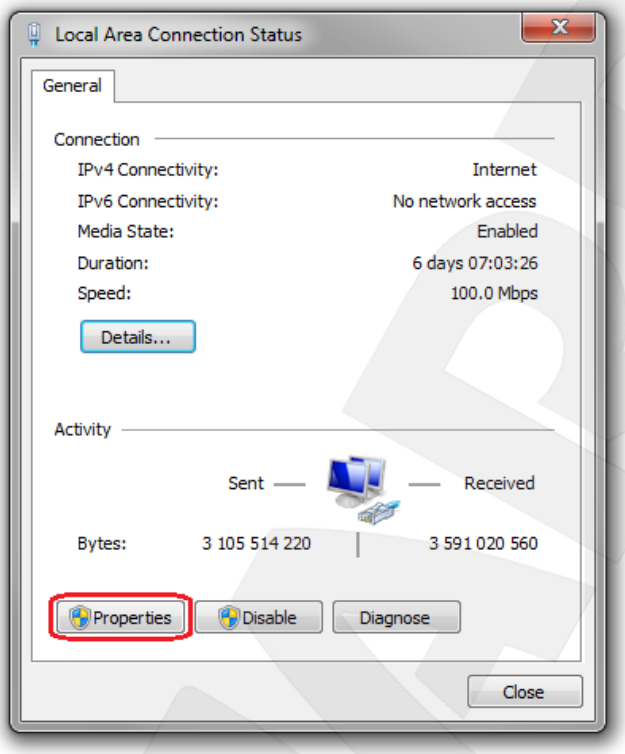

Control Panel ▸ Network and Internet ▸ Network and Sharing Center
Search Control Panel
Control Panel Home
Change adapter settings
Change advanced sharing settings
View your basic network information and set up connections
See full map
CONTENTMGR (This computer)
Multiple networks
Internet
View your active networks
Connect or disconnect
Network 4
Public network
Access type: Internet
Connections: Local Area Connection
Change your networking settings
Set up a new connection or network
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Connect to a network
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.
Choose homegroup and sharing options
Access files and printers located on other network computers, or change sharing settings.
Troubleshoot problems
Diagnose and repair network problems, or get troubleshooting information.
See also
HomeGroup
iCloud
Internet Options
Windows Firewall

Pic. 5.3

NOTE:

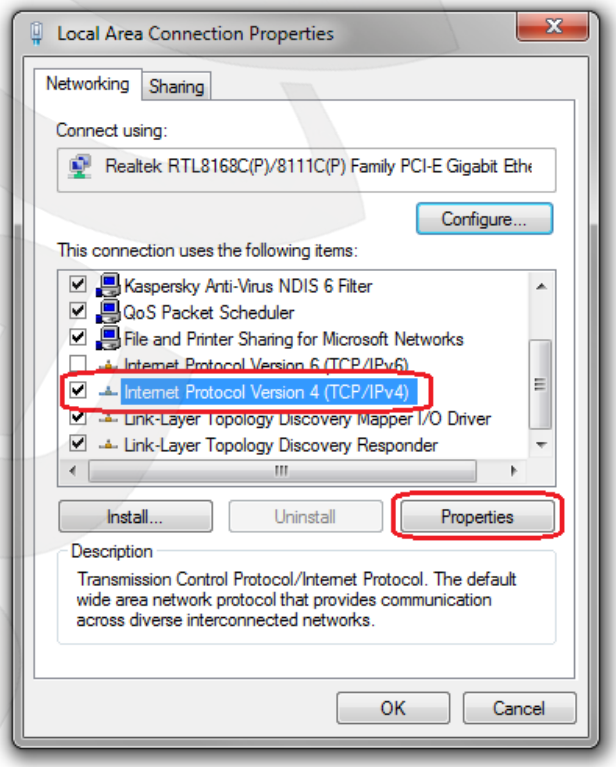
If there are several active networks, choose the one that you are going to connect your camera to.

In the opened window, click the **[Properties]** button (*Pic. 5.4*).



Pic. 5.4

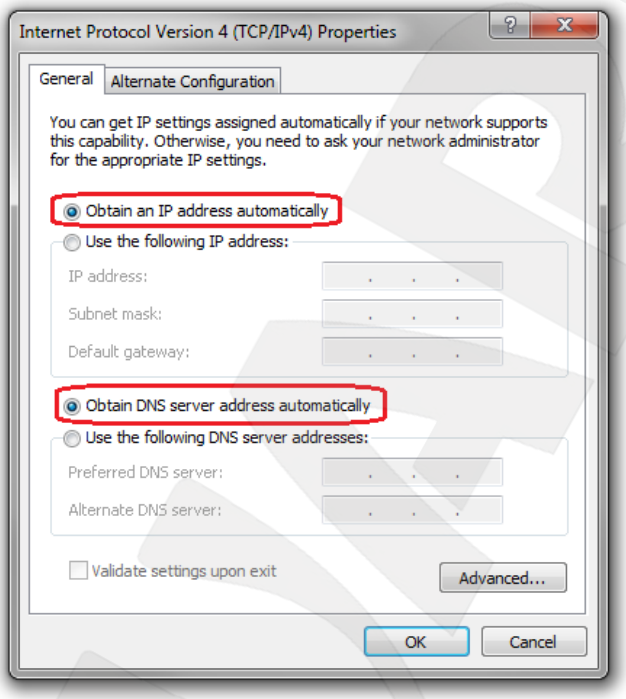
The connection properties window opens, where you should select the **[Internet Protocol Version 4 (TCP/IPv4)]** menu and click the **[Properties]** button (*Pic. 5.5*).



Pic. 5.5

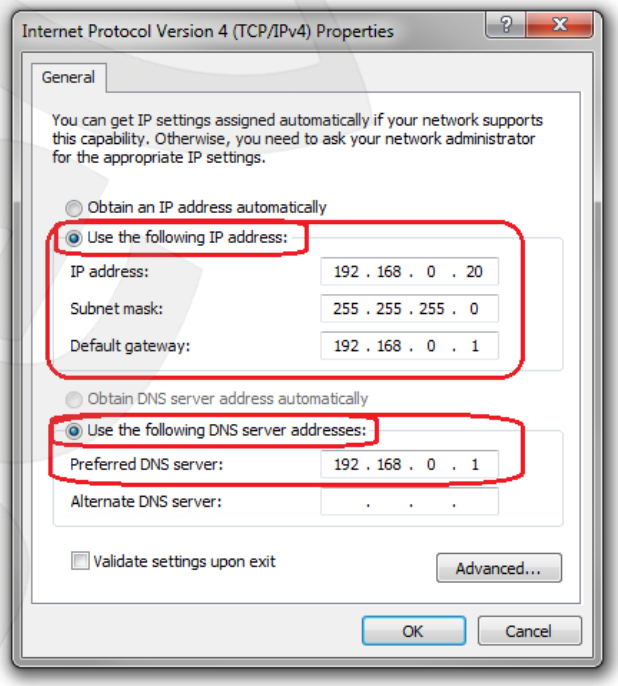
The window opens displaying information about the network connection settings. There are two ways to configure the IP address:

Obtain an IP address automatically: select this option to obtain an IP address automatically from a DHCP server on your network (*Pic. 5.6*). If an IP address is automatically assigned to your computer, go to paragraph 5.1.1 to define the network parameters.


Internet Protocol Version 4 (TCP/IPv4) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

Pic. 5.6

Use the following IP address: an IP address is manually specified (*Pic. 5.7*).


Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 0 . 20
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 0 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 192 . 168 . 0 . 1
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

Pic. 5.7

Please make a note of the following parameters: IP address, Subnet mask, Default gateway, DNS server.

IMPORTANT!

If you do not make a note of the network parameters, you will not be able to return the computer's network settings to their initial state to connect it to a local network or the Internet after configuring the N1250. Therefore, your computer will not have local network and/or Internet access.

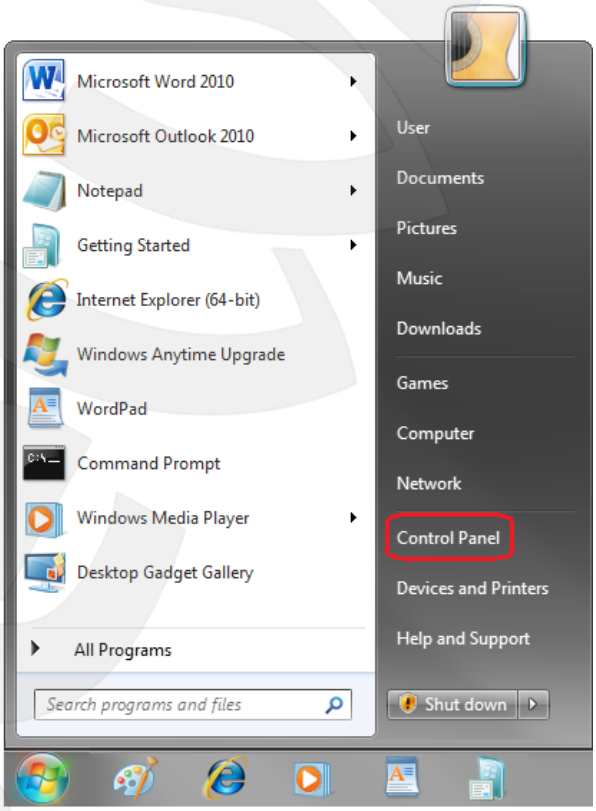
5.1.1. Defining the Local Network Parameters When Using a Dynamic IP Address

NOTE:

This paragraph explains how to define the local network parameters if an IP address is automatically assigned to your computer via DHCP server.

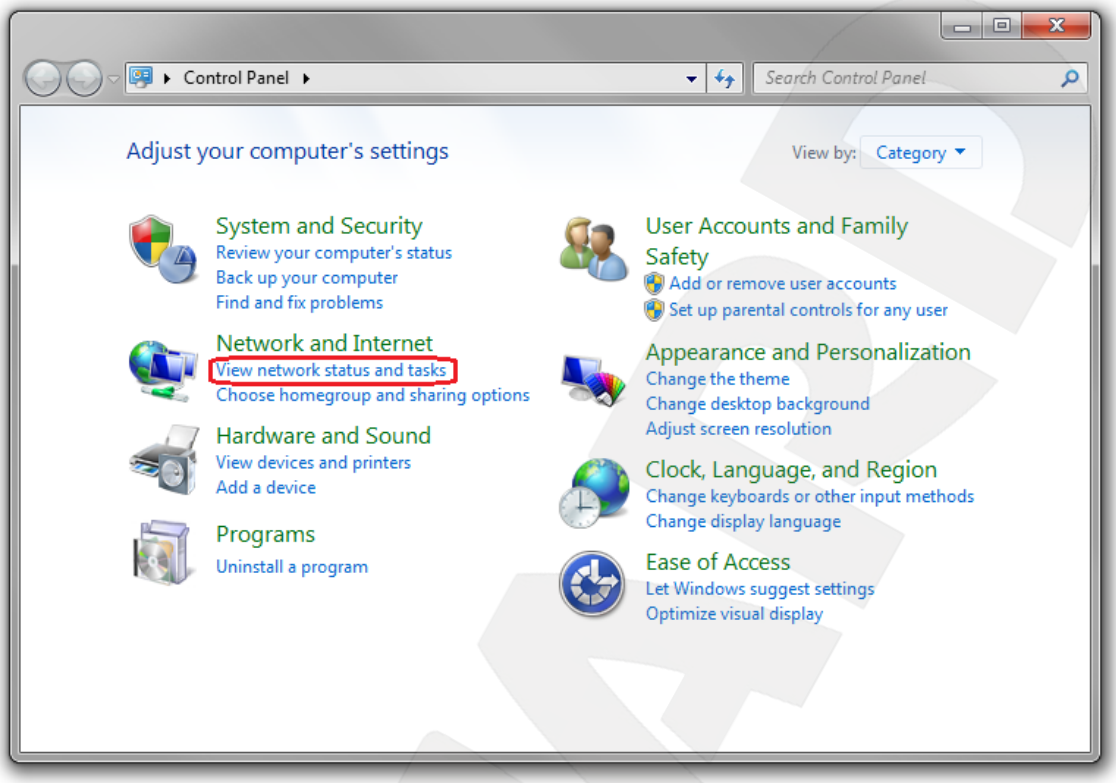
Connect a computer (laptop) to your local network using a network cable and wait until the connection process is complete.

To define the local network settings, go to ***Start – Control Panel*** (*Pic. 5.8*).



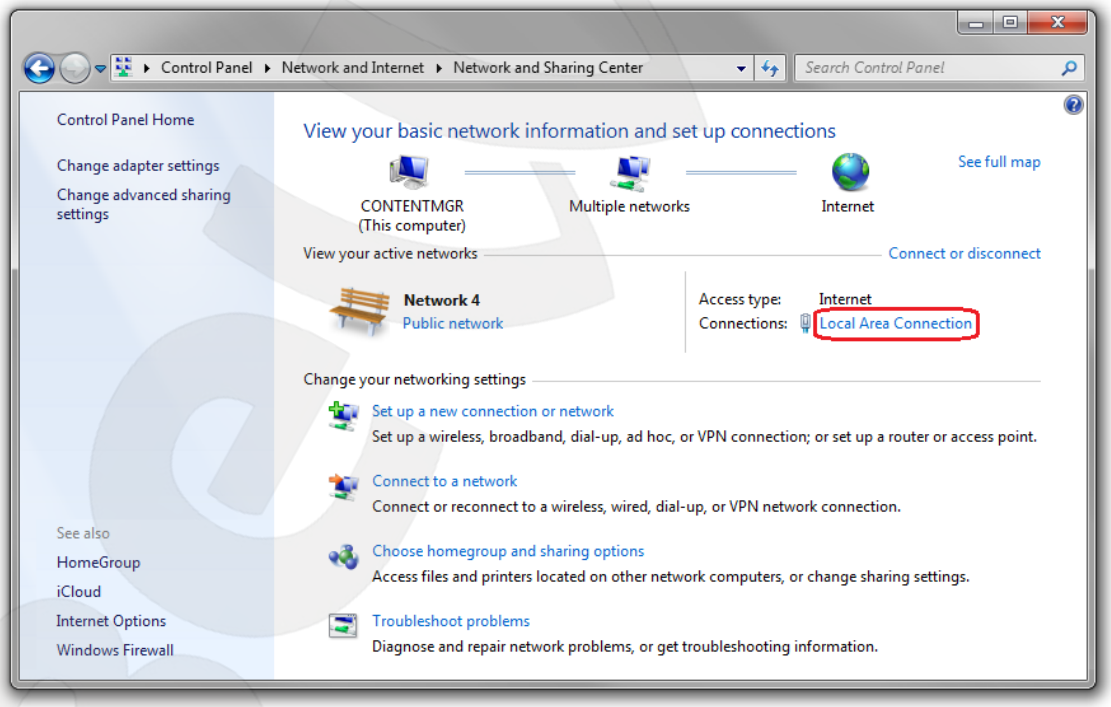
Pic. 5.8

In the opened window, click on the **[View network status and tasks]** in the **[Network and Internet]** section (*Pic. 5.9*).



Pic. 5.9

In the opened window, click on the **[Local Area Connection]** (*Pic. 5.10*).

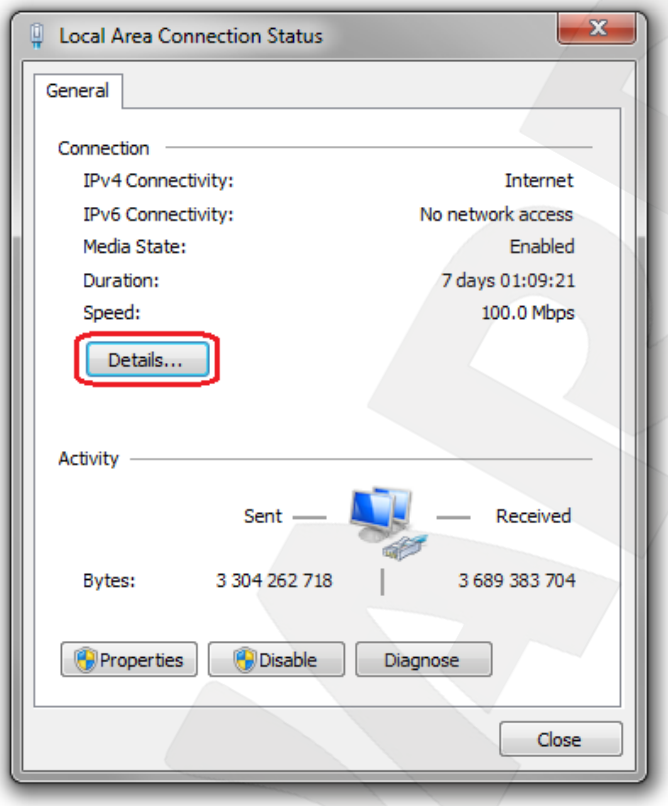

Control Panel ▸ Network and Internet ▸ Network and Sharing Center
Search Control Panel
Control Panel Home
Change adapter settings
Change advanced sharing settings
View your basic network information and set up connections
See full map
CONTENTMGR (This computer)
Multiple networks
Internet
View your active networks
Connect or disconnect
Network 4
Public network
Access type: Internet
Connections: Local Area Connection
Change your networking settings
Set up a new connection or network
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Connect to a network
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.
Choose homegroup and sharing options
Access files and printers located on other network computers, or change sharing settings.
Troubleshoot problems
Diagnose and repair network problems, or get troubleshooting information.
See also
HomeGroup
iCloud
Internet Options
Windows Firewall

Pic. 5.10

NOTE:

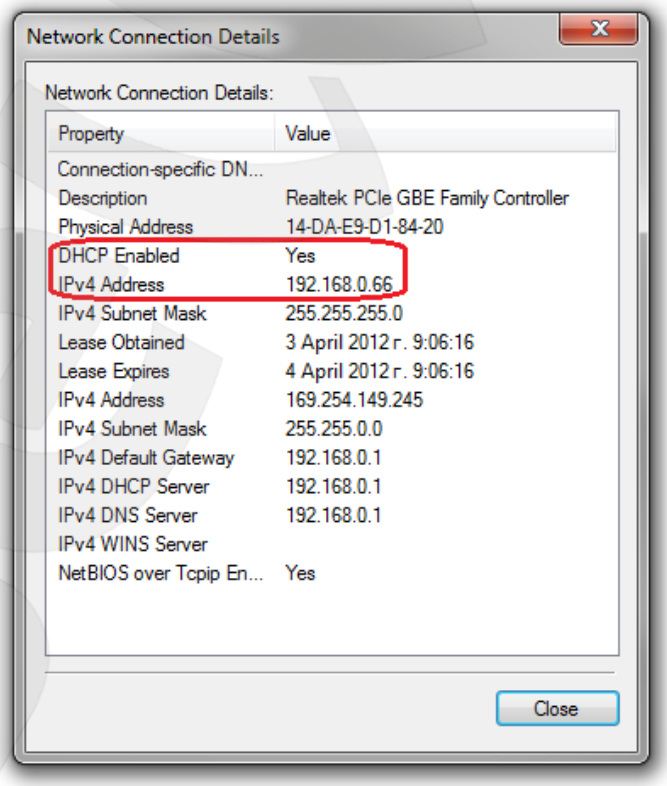
If there are several active networks, choose the one that you are going to connect your camera to.

In the opened window, click the **[Details]** button (*Pic. 5.11*).



Pic. 5.11

In the opened window, you can see the current network connection details (*Pic. 5.12*).



Pic. 5.12

If you see the following information in the opened window: **[DHCP Enabled]** – Yes, **[IPv4 Address]** – xxx.xxx.xxx.xxx (xxx.xxx.xxx.xxx is an IP address value), it means your computer is assigned an IP address displayed in the **[IPv4 Address]** line, a subnet mask displayed in the **[IPv4 Subnet Mask]** line, a gateway address displayed in the **[IPv4 Default Gateway]** line, a DNS server address displayed in the **[IPv4 DNS Server]** line.

Please make a note of the following parameters: IP address, Subnet mask, Default gateway, DNS server.

IMPORTANT!
If you do not make a note of the network parameters, you will not be able to return the computer's network settings to their initial state to connect the computer to a local network or the Internet after configuring the N1250. Therefore, your computer will not have local network and/or Internet access.

IMPORTANT!
If you see the following information in the **[Network Connection Details]** window: **[DHCP Enabled]** – Yes, **[IPv4 Address Autoconfiguration] – xxx.xxx.xxx.xxx** (xxx.xxx.xxx.xxx is an IP address value), it means you could not establish a wired connection and the DHCP server did not assign the computer an IP address. Please check the connection settings or contact your system administrator.

5.2. Changing the Local Network Parameters

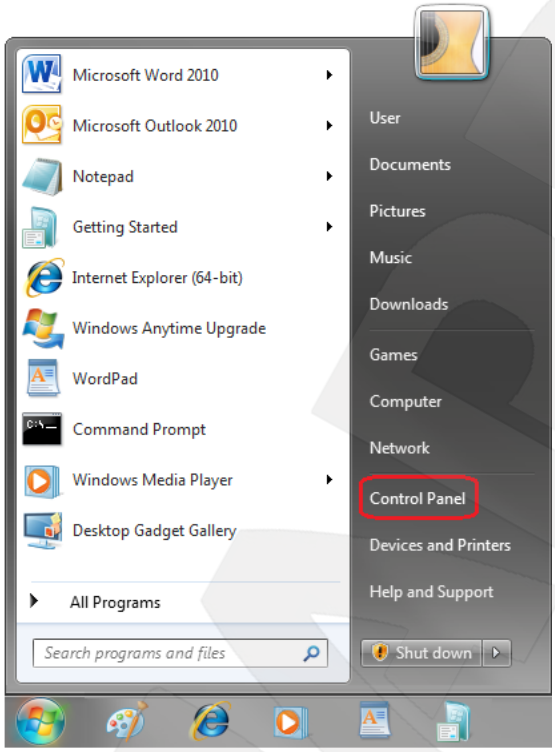
IMPORTANT!
Despite the BEWARD N1250 camera offers wireless functionality, you must connect it to a local network or a computer through an Ethernet cable first. Then you must set up both the wired and wireless connections. Once they are set up, you can use the camera's wireless functionality and unplug the Ethernet cable from it.

The default IP address of the N1250 IP camera is 192.168.0.99. To connect to the camera, you need to get your computer and your camera on the same subnet. Take notice that each device must have a unique IP address.

IMPORTANT!
The camera's default IP address is **192.168.0.99**. If you use several IP cameras, you need to change their default IP addresses so that each camera will have a unique IP address to prevent an IP address conflict.

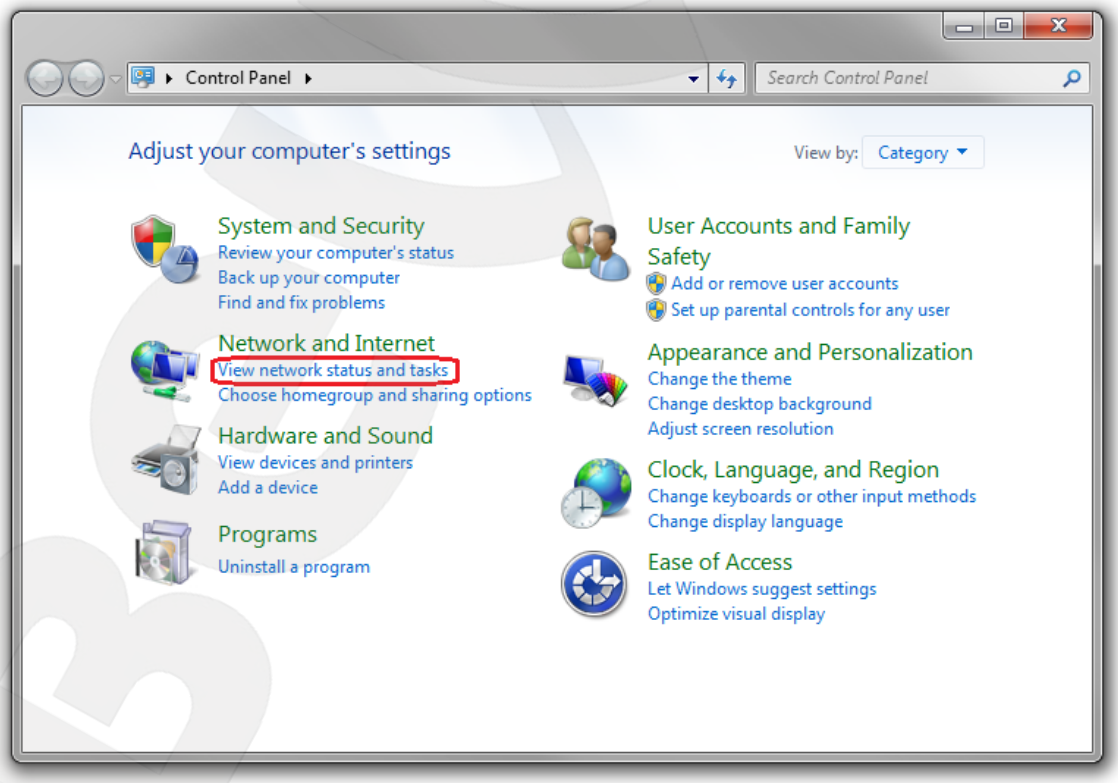
IMPORTANT!
If you are sure that your computer and your IP camera are on the same subnet, you can skip this paragraph and go to paragraph 5.3.

To change your computer network settings, go to ***Start – Control Panel*** (*Pic. 5.13*).



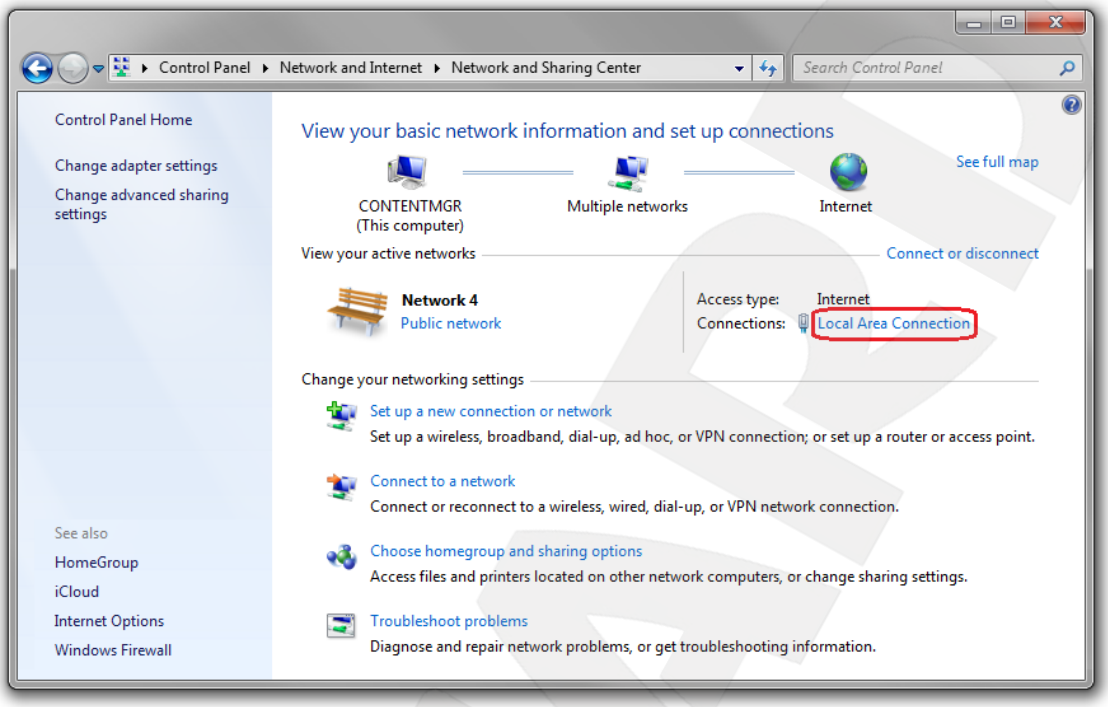
Pic. 5.13

In the opened window, click on the **[View network status and tasks]** in the **[Network and Internet]** section (*Pic. 5.14*).



Pic. 5.14

In the opened window, click on the **[Local Area Connection]** (*Pic. 5.15*).

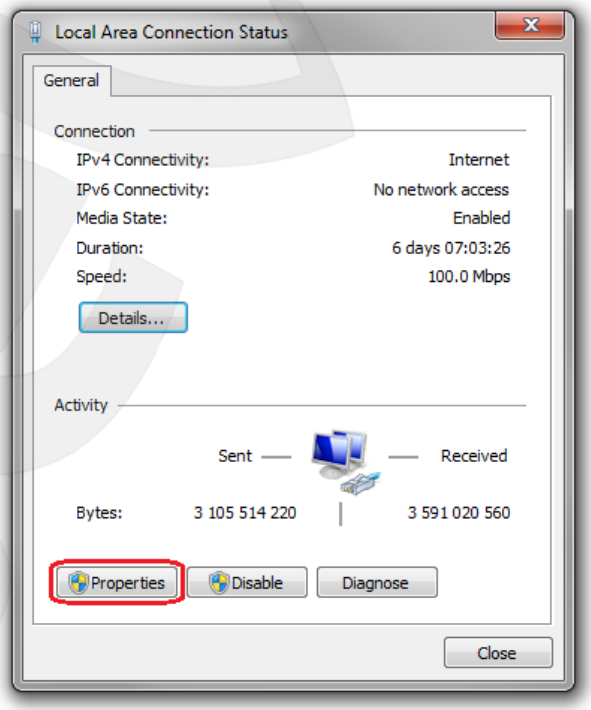

Control Panel ▸ Network and Internet ▸ Network and Sharing Center
Search Control Panel
Control Panel Home
Change adapter settings
Change advanced sharing settings
View your basic network information and set up connections
See full map
CONTENTMGR (This computer)
Multiple networks
Internet
View your active networks
Connect or disconnect
Network 4
Public network
Access type: Internet
Connections: Local Area Connection
Change your networking settings
Set up a new connection or network
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Connect to a network
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.
Choose homegroup and sharing options
Access files and printers located on other network computers, or change sharing settings.
Troubleshoot problems
Diagnose and repair network problems, or get troubleshooting information.
See also
HomeGroup
iCloud
Internet Options
Windows Firewall

Pic. 5.15

NOTE:

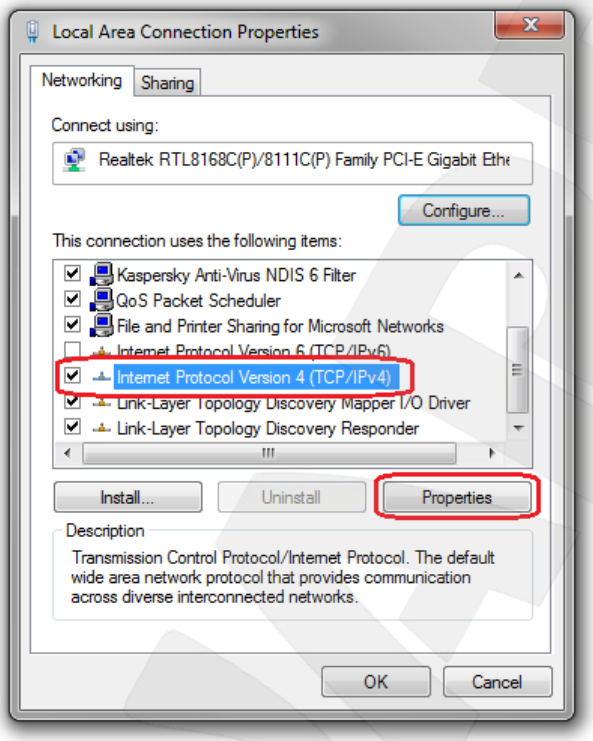
If there are several active networks, choose the one that you are going to connect your camera to.

In the opened window, click the **[Properties]** button (*Pic. 5.16*).



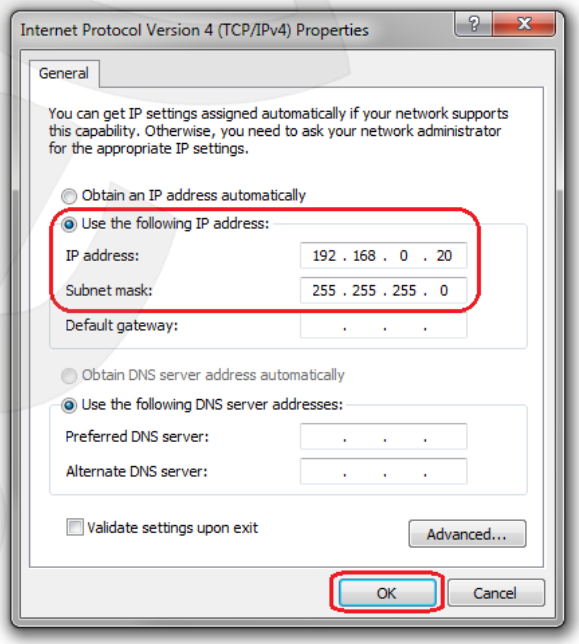
Pic. 5.16

The connection properties window opens, where you should select the **[Internet Protocol Version 4 (TCP/IPv4)]** menu and click the **[Properties]** button (*Pic. 5.17*).



Pic. 5.17

The window opens, where you need to specify an IP address and a subnet mask. Click the **[Use the following IP address]** and type an unused **[IP address]** from the same subnet as the camera, for example, 192.168.0.20, and 255.255.255.0 in the **[Subnet mask]** field. You can skip the other parameters (*Pic. 5.18)*.


Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 0 . 20
Subnet mask: 255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

Pic. 5.18

Click the **[OK]** button to save the changes.

5.3. Accessing the IP Camera

There are three ways to access this IP camera:

- Using **"BEWARD IP Installer"** software;
- Using the **[Network]** menu in Windows 7;
- Using Internet Explorer browser.

IMPORTANT!

When connecting the camera, take notice that the camera's default IP address is 192.168.0.99.

5.3.1. Installing "BEWARD IP Installer" Software

Insert the supplied CD into your CD-ROM drive. You will see the installation menu (*Pic. 5.19*).

To start the installation, select **"BEWARD IP Installer"** and follow the instructions of the installation wizard until the installation ends.

Pic. 5.19

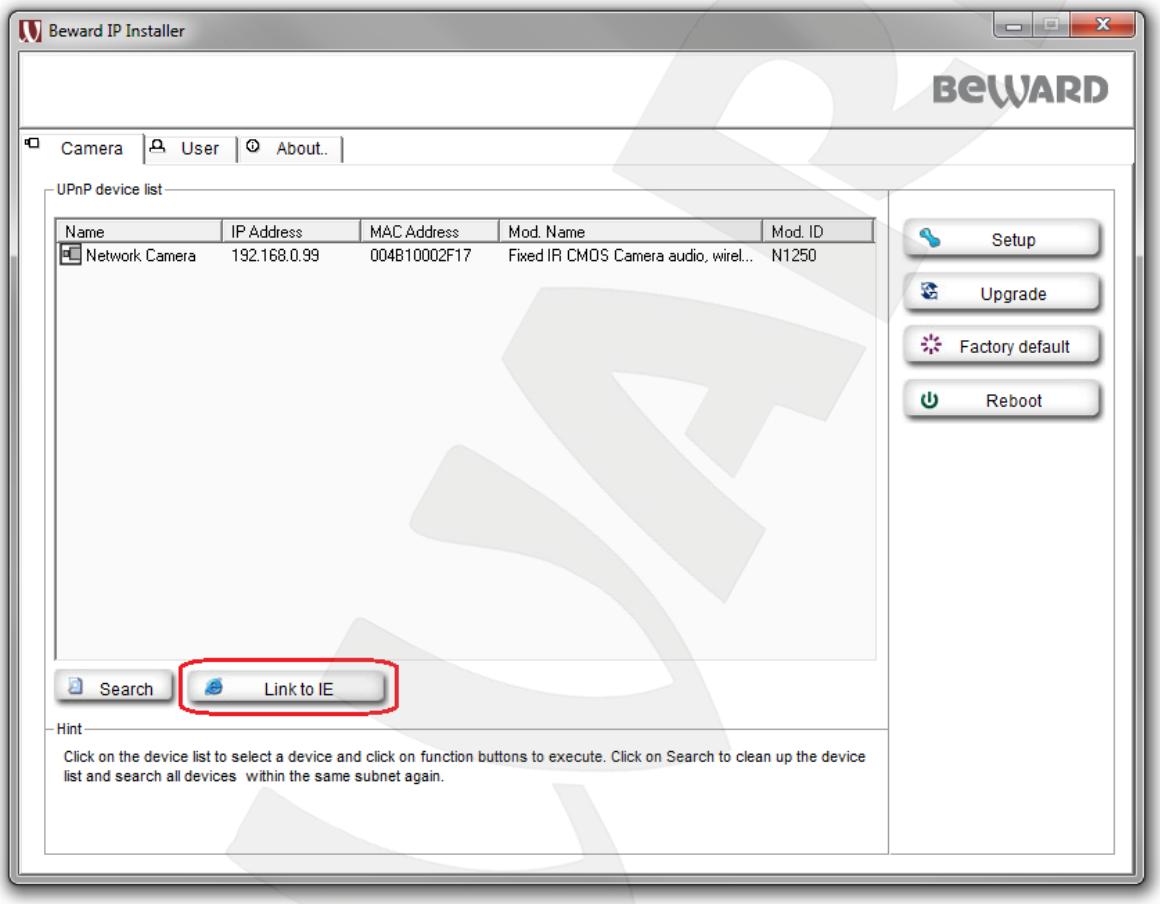
5.3.2. Accessing the IP Camera Using "BEWARD IP Installer" Software

IMPORTANT!

To access the IP camera using **"BEWARD IP Installer"** software, you need to enable UPnP for both your computer and the IP camera. UPnP is enabled by default in Windows 7.

NOTE:
UPnP is enabled by default in the N1250 IP camera.

To search for IP cameras using **"BEWARD IP Installer"** software, launch it using the shortcut on your desktop. In the opened window you can see a list of available cameras and video servers. Select your IP camera and click the **[Link to IE]** button (*Pic. 5.20*).



Pic. 5.20

IMPORTANT!
In order to make **"BEWARD IP Installer"** software work properly, add it to the antivirus and the firewall authorized list.

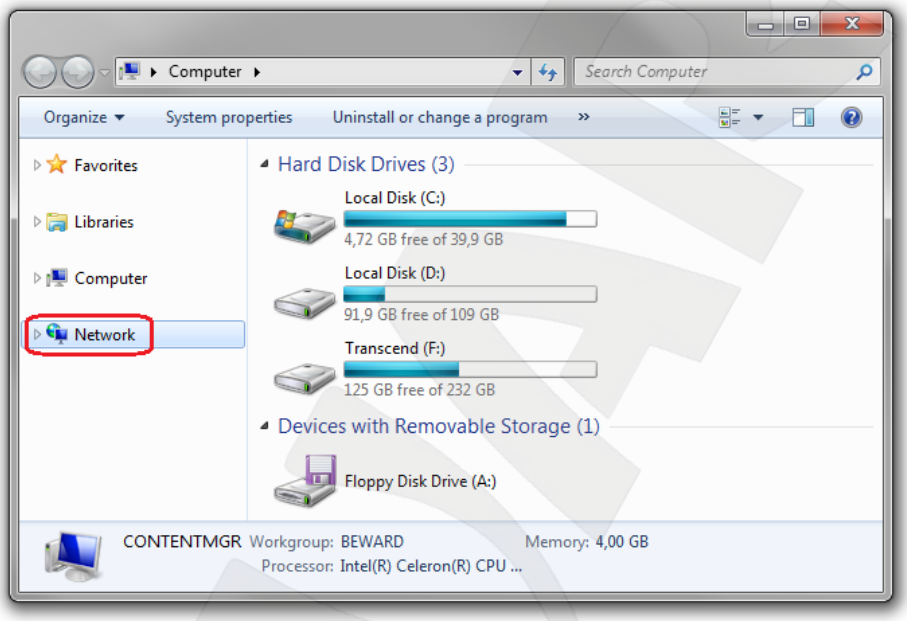
NOTE:
You may need to run BEWARD IP Installer as an administrator in order to make it work properly in Windows 7. To do so, right-click the shortcut and select **[Run as administrator]** in the drop-down list.

NOTE:
If an IP camera is missed in the UPnP device list, click the **[Search]** button to refresh it.

5.3.3. Accessing the IP Camera Using the Network Menu in Windows 7

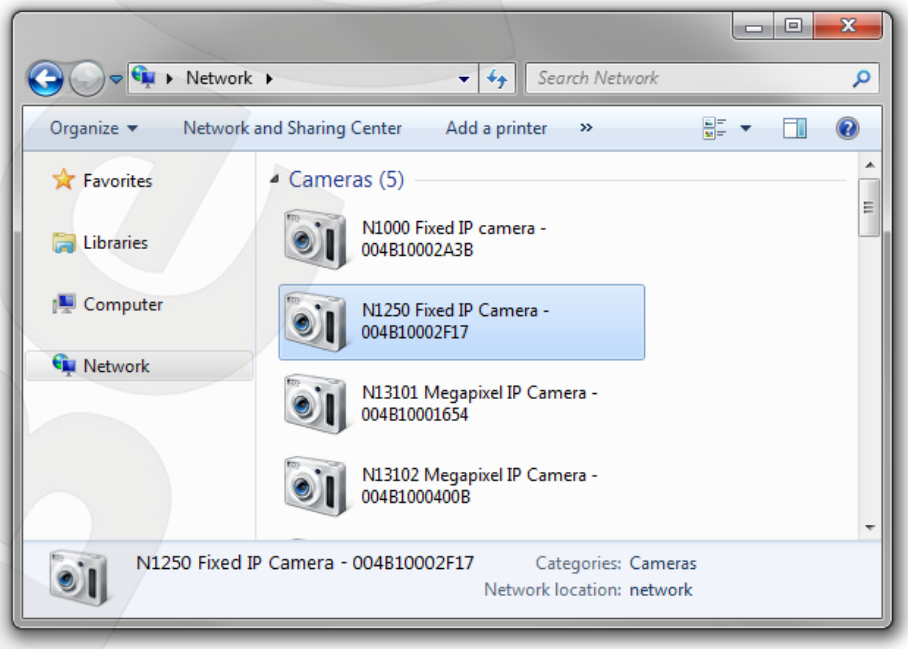
NOTE:
UPnP is enabled by default in the N1250 IP camera.

To search for the N1250 using the **[Network]** menu in Windows 7, go to the **[Computer]** menu and click the **[Network]** (*Pic. 5.21*).



Pic. 5.21

In the appeared window, find the camera and double-click it with the left mouse button (*Pic. 5.22*).



Pic. 5.22

This will open the camera in Internet Explorer where you can configure the camera and view the images.

5.3.4. Accessing the IP Camera Using Internet Explorer

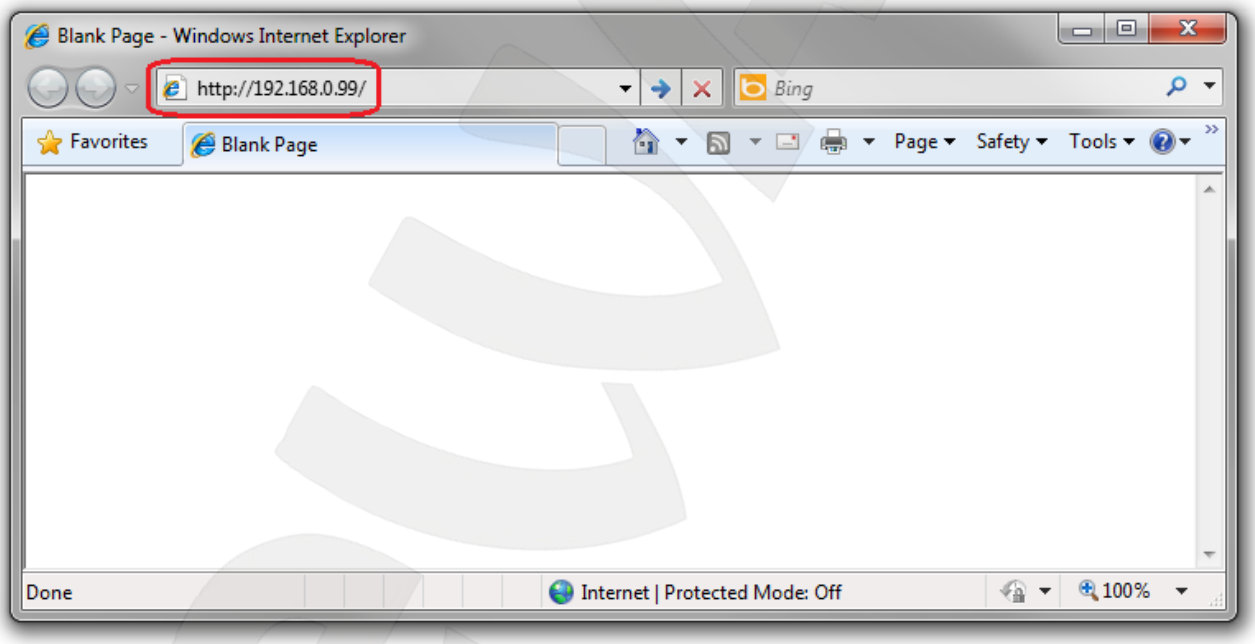
To access this camera through Internet Explorer, launch this browser and enter the following in the address field: http://<IP>:<port>/, where <IP> is the IP address of the camera, <port> is the port number that is used for HTTP connection to the camera (*Pic. 5.23*).

IMPORTANT!

The default IP address of the BEWARD N1250 is 192.168.0.99.

NOTE:

You do not need to enter a port number if you are connecting through the default HTTP port 80.



Pic. 5.23

5.4. Accessing the Web Interface

After you accessed the camera using any of the ways described in paragraphs 5.3.2 – 5.3.4, Internet Explorer will be launched and an authorization window will appear.

NOTE:

The web interface requires Internet Explorer 8.0 or later to run and display correctly.

Enter the camera's user name and password, then click **[OK]** (*Pic. 5.24*).

IMPORTANT!

The default user name is **admin**, the default password is **admin**.

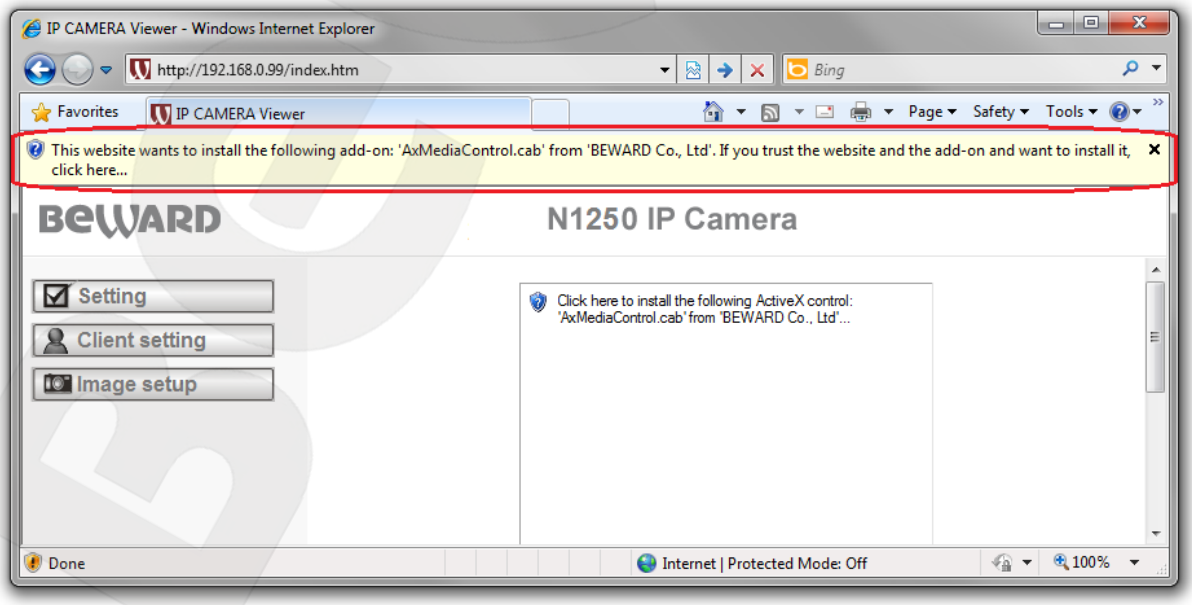
Windows Security
The server 192.168.0.99 at N1250 Fixed IP Camera requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
User name
Password
Remember my credentials
OK
Cancel

Pic. 5.24

IMPORTANT!

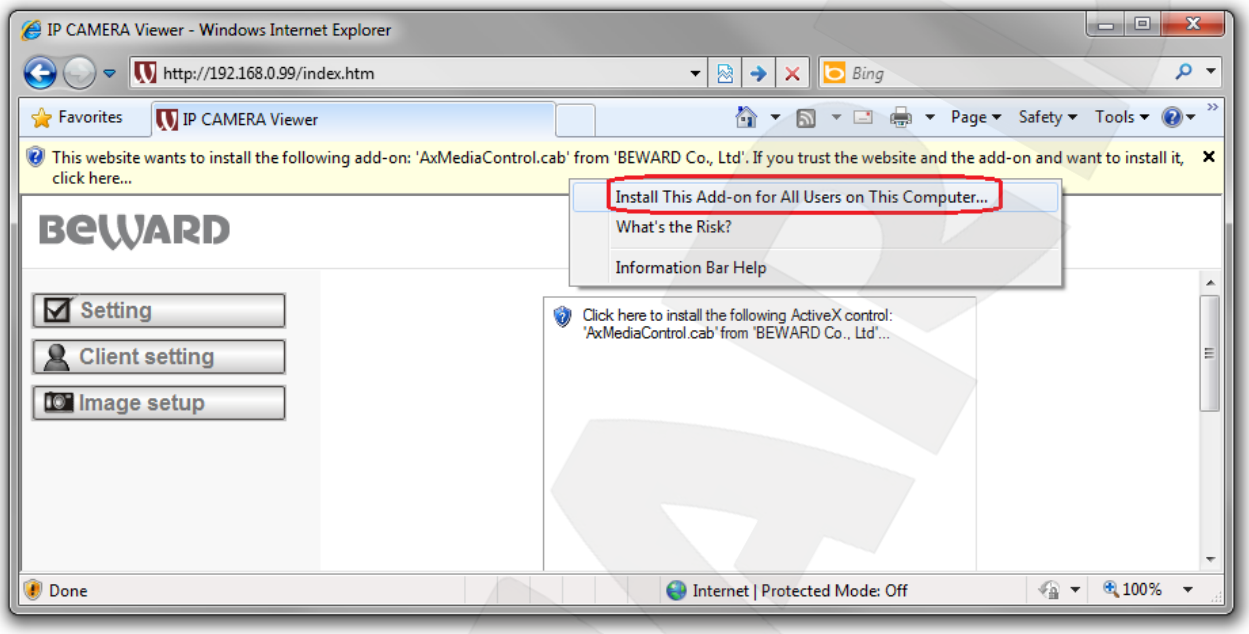
By default, Internet Explorer blocks ActiveX controls. When accessing the camera for the first time, you will see a security warning that ActiveX add-on installation is blocked.

After successful authorization, you will be prompted to install an ActiveX add-on. You will see a system notification under the address bar: **"This website wants to install the following add-on: "AxMediaControl.cab" from "BEWARD Co., Ltd.". If you trust the website and the add-on and want to install it, click here…"** (*Pic. 5.25*).


IP CAMERA Viewer - Windows Internet Explorer
http://192.168.0.99/index.htm
Bing
Favorites
IP CAMERA Viewer
Page
Safety
Tools
This website wants to install the following add-on: 'AxMediaControl.cab' from 'BEWARD Co., Ltd'. If you trust the website and the add-on and want to install it, click here...
BEWARD
N1250 IP Camera
Setting
Client setting
Image setup
Click here to install the following ActiveX control: 'AxMediaControl.cab' from 'BEWARD Co., Ltd'...
Done
Internet | Protected Mode: Off
100%

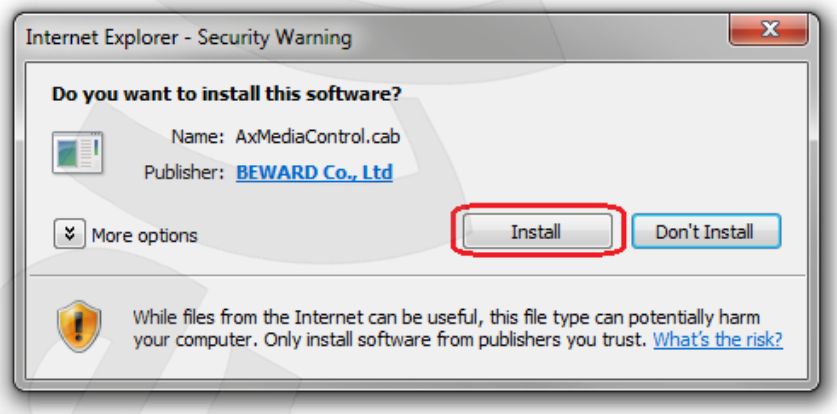
Pic. 5.25

Click right mouse button on this notification. In the drop-down menu select **"Install This Add-on for All Users on This Computer…"** or click on the area **"Click here to install the following ActiveX control: "AxMediaControl.cab" from "BEWARD Co., Ltd."…"** (*Pic. 5.26*)


IP CAMERA Viewer - Windows Internet Explorer
http://192.168.0.99/index.htm
Bing
Favorites
IP CAMERA Viewer
Page
Safety
Tools
This website wants to install the following add-on: 'AxMediaControl.cab' from 'BEWARD Co., Ltd'. If you trust the website and the add-on and want to install it, click here...
Install This Add-on for All Users on This Computer...
What's the Risk?
Information Bar Help
BEWARD
Setting
Client setting
Image setup
Click here to install the following ActiveX control:
'AxMediaControl.cab' from 'BEWARD Co., Ltd'...
Done
Internet | Protected Mode: Off
100%

Pic. 5.26

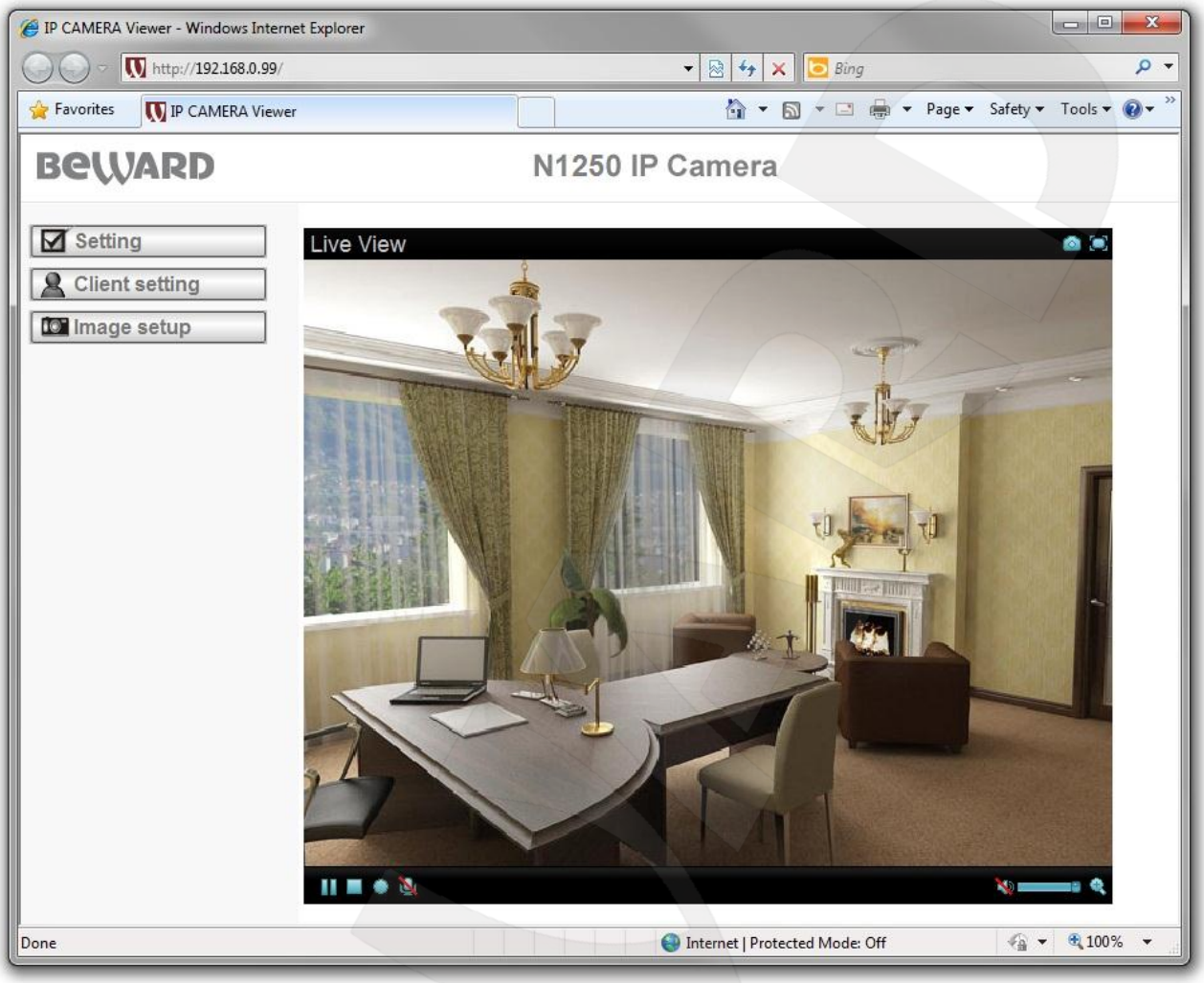
By default, Internet Explorer prevents ActiveX add-ons from installation; click **[Install]** to continue (*Pic. 5.27*).


Internet Explorer - Security Warning
Do you want to install this software?
Name: AxMediaControl.cab
Publisher: BEWARD Co., Ltd
More options
Install
Don't Install
While files from the Internet can be useful, this file type can potentially harm your computer. Only install software from publishers you trust. What's the risk?

Pic. 5.27

NOTE:
When installing ActiveX controls for Windows 7 with enabled User Account Control (UAC), it prevents them from installation and generates a warning message. Click yes in the appeared window.

If everything was done correctly, you should get the camera images via browser. The settings bar is on the left side, the camera images are on the right side (*Pic. 5.28*).



Pic. 5.28

5.5. Configuring the Camera's Network Settings through the Web Interface

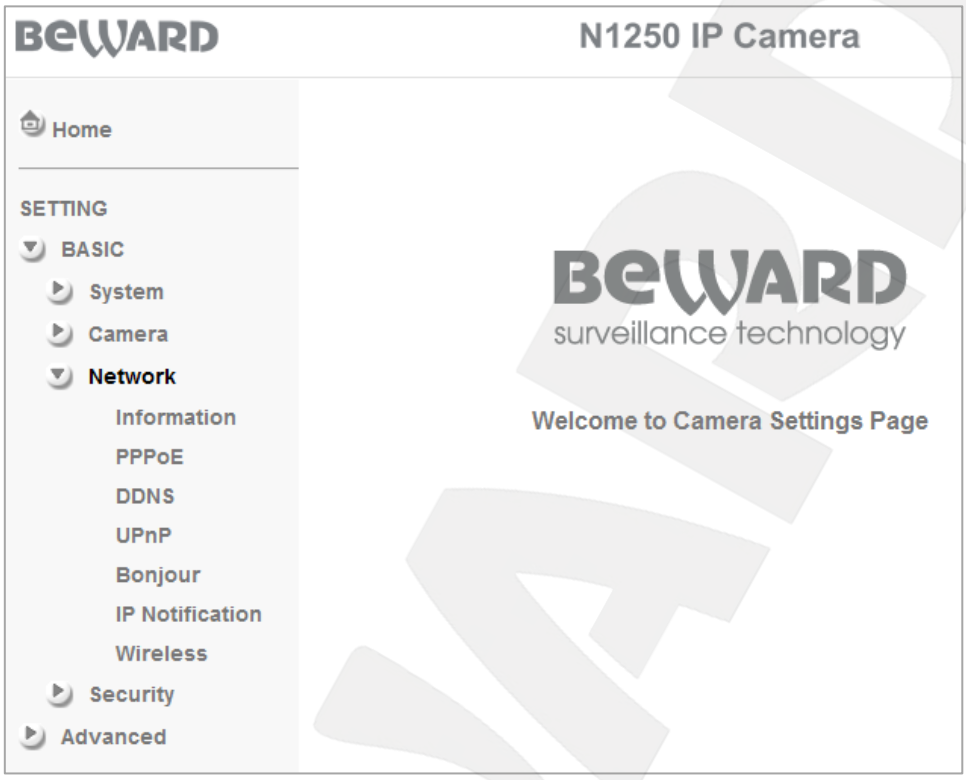
After connecting to the N1250, you need to change its network parameters to get it and your other devices (e.g. your computer) to the same subnet.

IMPORTANT!

To make your camera and your computer work together, the first three parts of their IP addresses must be the same but the fourth must be different.

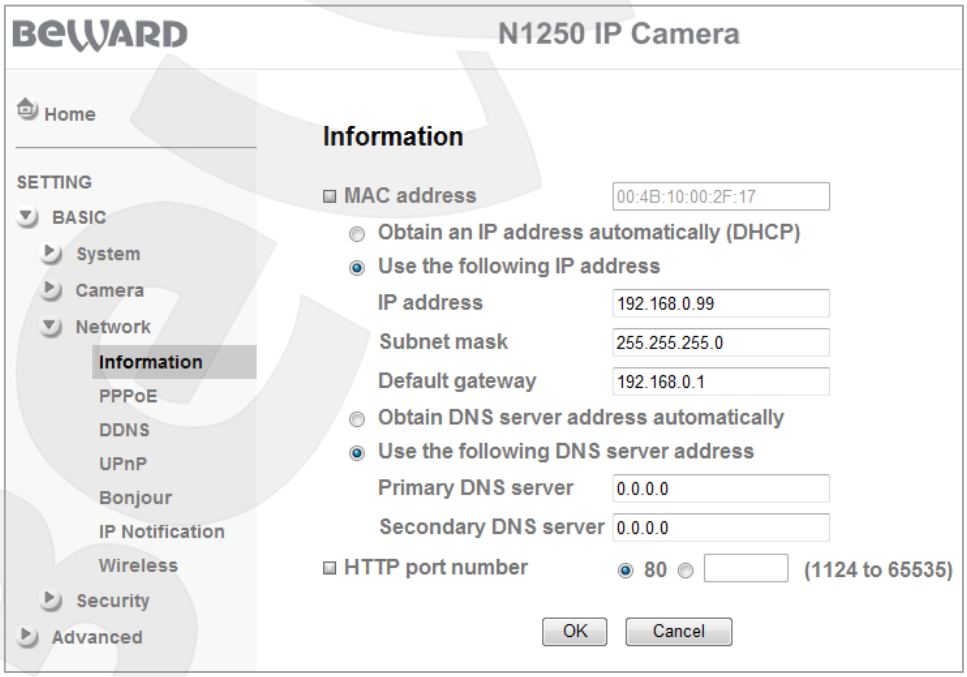
For example, the IP address of your computer is 192.168.50.40. An IP address consists of four octets separated by dots. In the provided example, the 1st octet is 192, the 2nd octet is 168, the 3rd octet is 50, and the 4th octet is 40. You need to change the IP address of your camera so that the first three octets of its IP address are the same as your computer's IP address. Therefore, the IP address of your camera must be of the form 192.168.50.XX. You only need to change the fourth octet to a number different from the IP address of your computer and other network devices.

To configure the network settings through the web interface, go to ***SETTING – Basic – Network***. The **[Network]** section is divided into several subsections (*Pic. 5.29*).



Pic. 5.29

The **[Information]** subsection provides options for configuring the general network settings (*Pic. 5.30*).

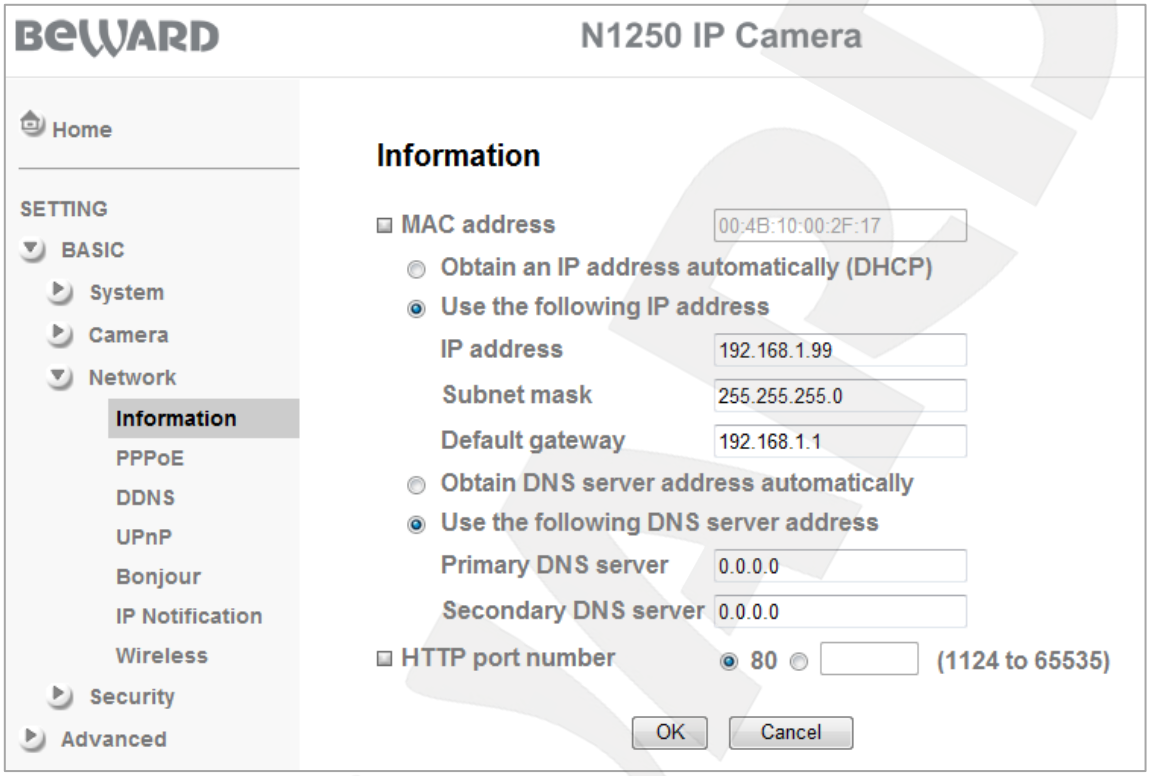


Pic. 5.30

You must specify the IP address and the other network parameters of the camera so it is on the same subnet as the other network devices (*Pic. 5.31*).

NOTE:

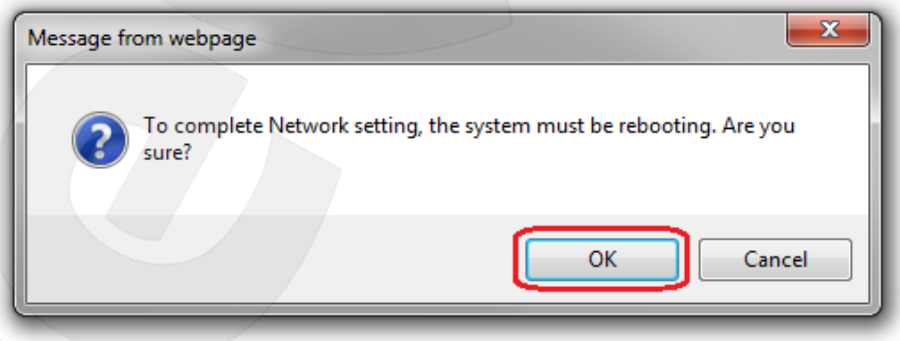
Contact your system administrator if you need assistance.



Pic. 5.31

Click **[OK]** to save the changes.

If the message from webpage appears, click **[OK]** (*Pic. 5.32*).

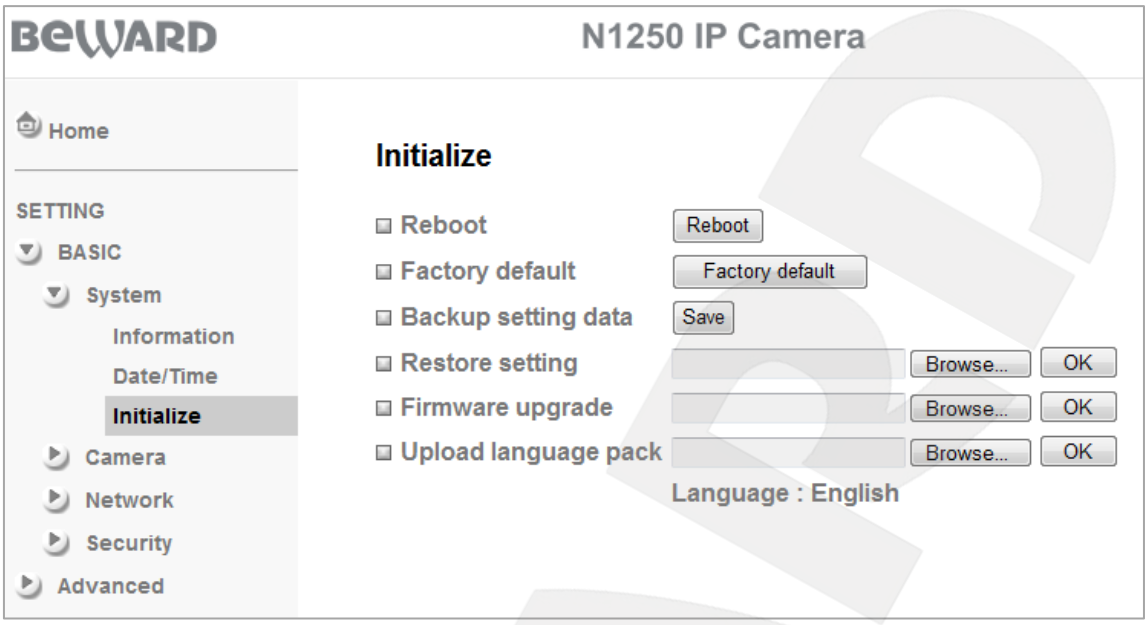


Pic. 5.32

IMPORTANT!

After you configure the network settings, you must reboot the camera.

To reboot your camera, go to ***SETTING – Basic – System – Initialize*** (*Pic. 5.33*).



Pic. 5.33

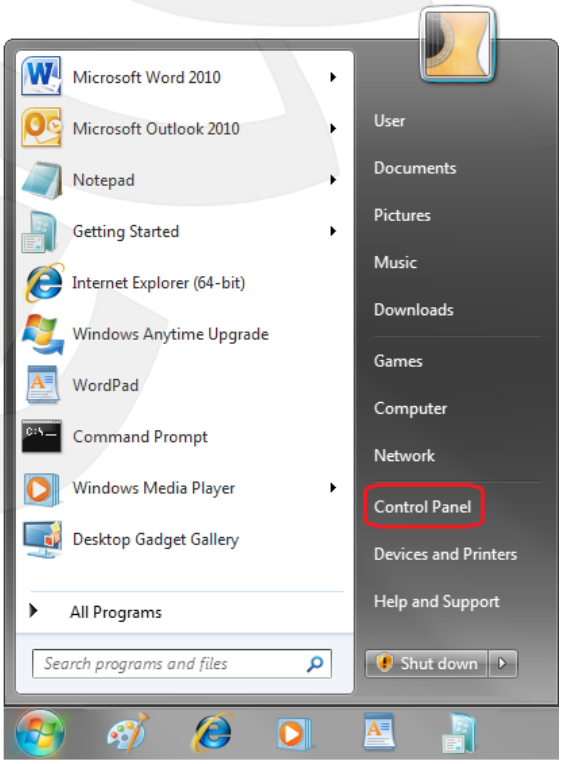
The camera takes 2-3 minutes to reboot. This completes the setting up of the wired connection.

Now you must restore the network settings of your computer to their previous values.

5.6. Restoring the Network Settings of the Computer to Their Previous Values

To restore the wired connection settings to their previous values, follow the steps below.

Go to ***Start – Control Panel*** (*Pic. 5.34*).

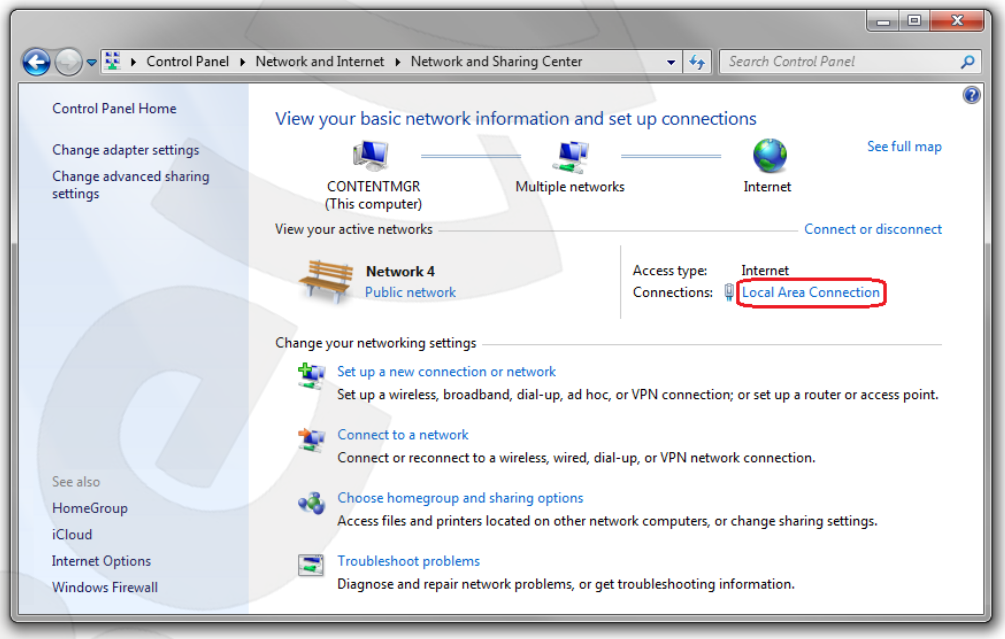


Pic. 5.34

In the opened window, click on the **[View network status and tasks]** in the **[Network and Internet]** section (*Pic. 5.35*).

Pic. 5.35

In the opened window, click on the **[Local Area Connection]** (*Pic. 5.36*).

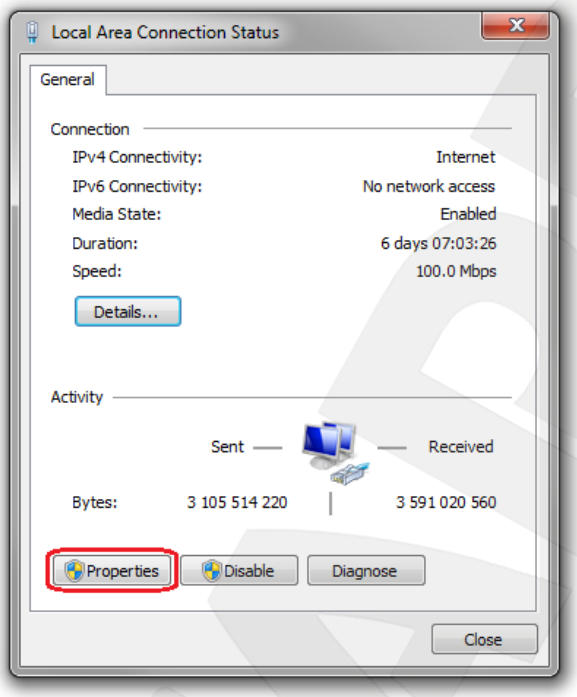

Control Panel ▸ Network and Internet ▸ Network and Sharing Center
Search Control Panel
Control Panel Home
Change adapter settings
Change advanced sharing settings
View your basic network information and set up connections
See full map
CONTENTMGR (This computer)
Multiple networks
Internet
View your active networks
Connect or disconnect
Network 4
Public network
Access type: Internet
Connections: Local Area Connection
Change your networking settings
Set up a new connection or network
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Connect to a network
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.
Choose homegroup and sharing options
Access files and printers located on other network computers, or change sharing settings.
Troubleshoot problems
Diagnose and repair network problems, or get troubleshooting information.
See also
HomeGroup
iCloud
Internet Options
Windows Firewall

Pic. 5.36

NOTE:

If there are several active networks, choose the one that you are going to connect your camera to.

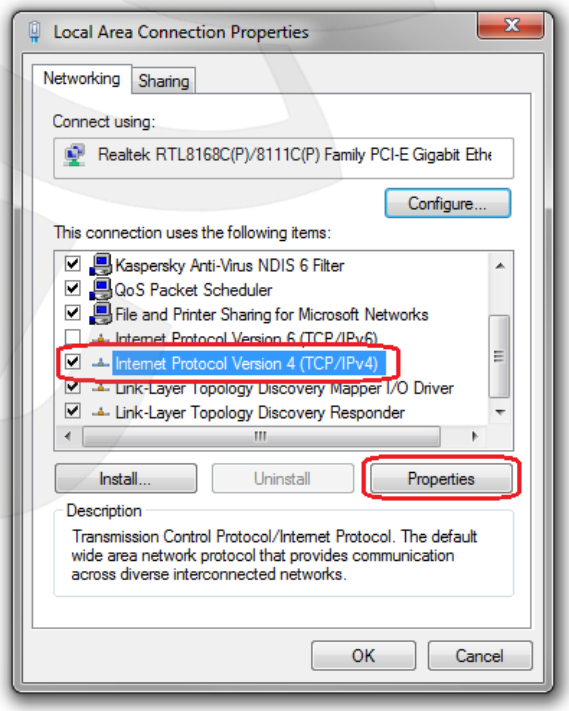
In the opened window, click the **[Properties]** button (*Pic. 5.37*).



Pic. 5.37

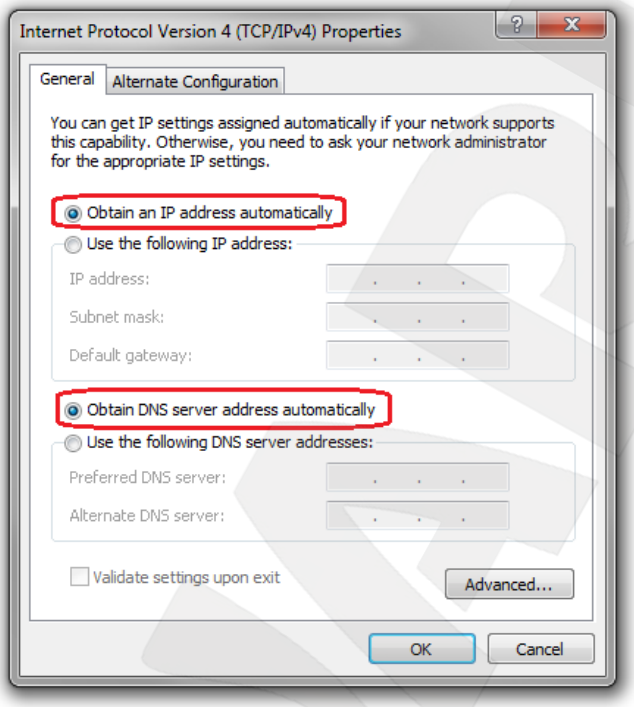
The connection properties window opens, where you need to specify your initial network settings (see paragraph 5.1, 5.1.1).

Select the **[Internet Protocol Version 4 (TCP/IPv4)]** menu and click the **[Properties]** button (*Pic. 5.38*).



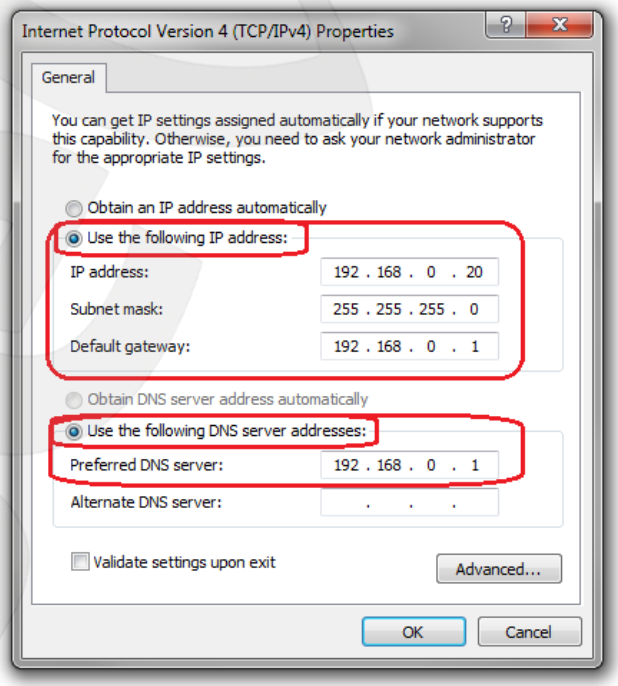
Pic. 5.38

If the IP settings were assigned automatically, use the **[Obtain an IP address automatically]** and the **[Obtain DNS server address automatically]** options (*Pic. 5.39*), then click **[OK]**.


Internet Protocol Version 4 (TCP/IPv4) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

Pic. 5.39

If the IP settings were specified manually, use the **[Use the following IP address]** and the **[Use the following DNS server addresses]** options and complete the required fields (see paragraph 5.1), then click **[OK]** (*Pic. 5.40*).


Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 0 . 20
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 0 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 192 . 168 . 0 . 1
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

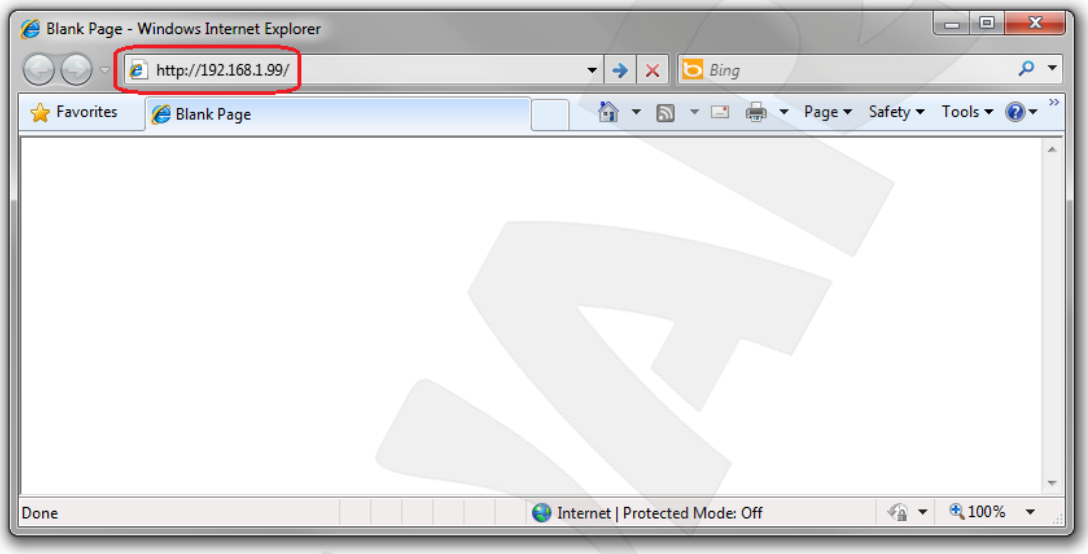
Pic. 5.40

5.7. Verifying the Connection Settings

To verify the network settings of your camera and your computer, you must access the camera through Internet Explorer.

Launch Internet Explorer. To do so, go to ***Start – All Programs*** and click **[Internet Explorer]**.

Enter the IP address of your camera in the address field (e.g. http://192.168.1.99) (*Pic. 5.41*).

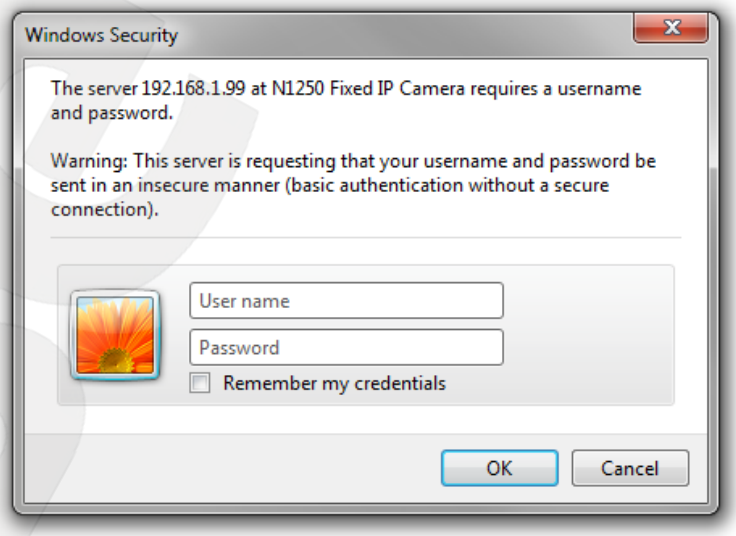


Pic. 5.41

If the settings are correct, an authorization window will appear. Enter the camera's user name and password, then click **[OK]** (*Pic. 5.42*).

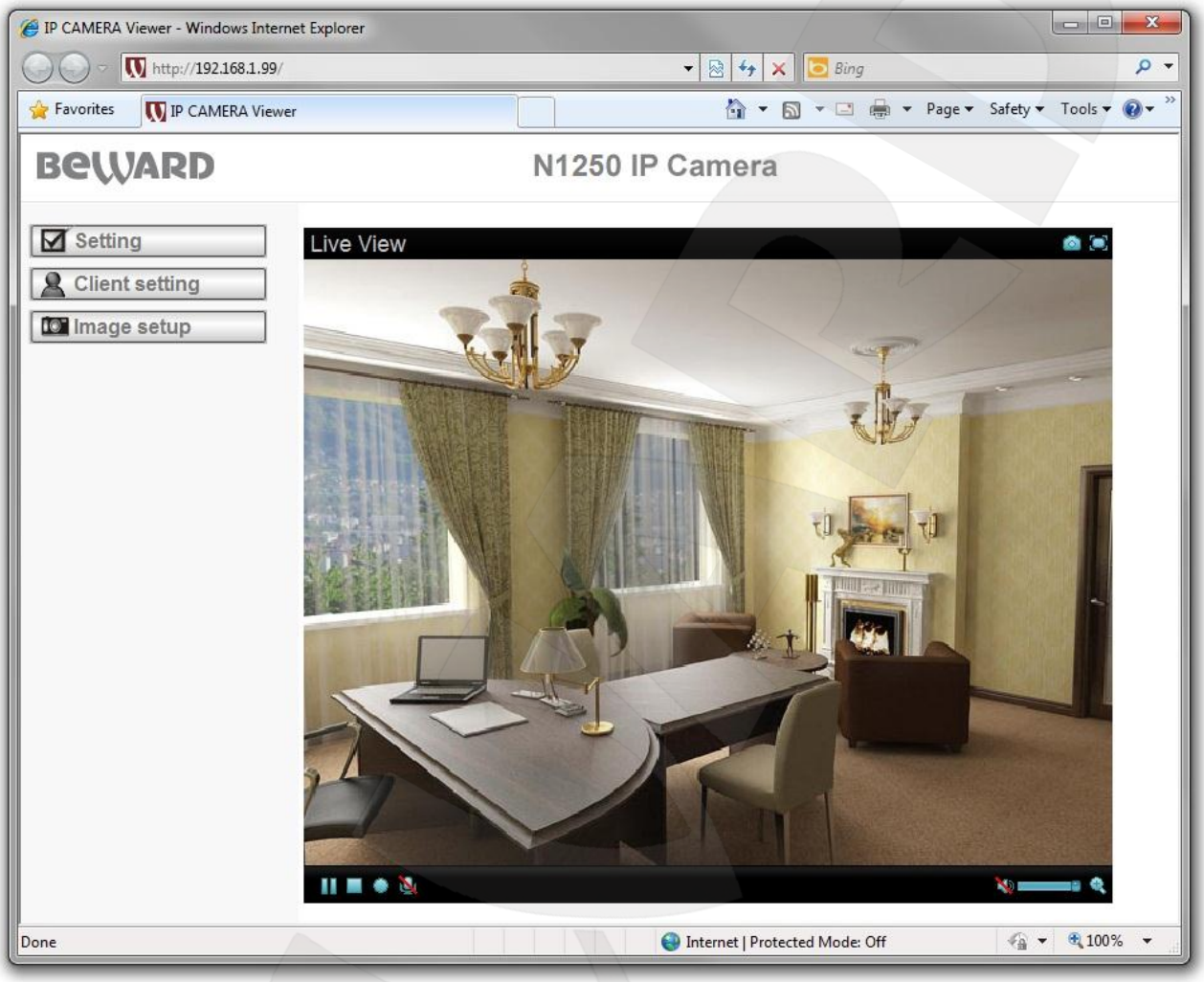
IMPORTANT!

The default user name is **admin**, the default password is **admin**.


Windows Security
The server 192.168.1.99 at N1250 Fixed IP Camera requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
User name
Password
Remember my credentials
OK
Cancel

Pic. 5.42

If everything was done correctly, you should get the camera images via browser. The settings bar is on the left side, the camera images are on the right side (*Pic. 5.43*).



Pic. 5.43

This completes the setting up of the wired connection.

Chapter 6. Establishing and Configuring the Wi-Fi Connection

6.1. Overview of Connecting the N1250 to a Wireless Network

To make the N1250 IP camera work together with your computer, your laptop, and other devices in your wireless network, you need to connect this camera to the network according to the wireless network parameters. To do so, you must define these parameters using either of the methods below:

- Access your router through the web interface and go to the wireless network page (see your router's manual).
- Define the Wi-Fi settings through other devices connected to the router (for example, a laptop).

6.2. Defining the Wireless Connection Settings for Windows 7

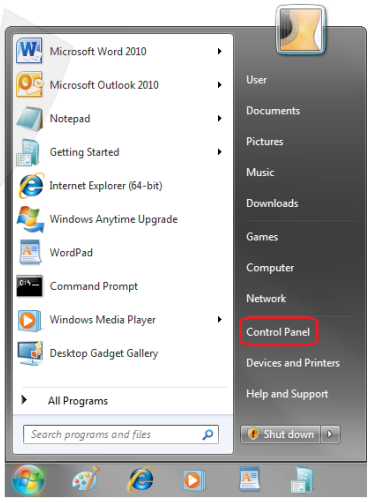
NOTE:
The connection establishment process is shown for Windows 7 Ultimate. Despite titles of system menus and options may differ from the titles of system menus and options that appear in other versions of Windows, the connection establishment process is universal.

NOTE:
If you know your wireless network settings, you can skip this paragraph and go to paragraph 6.3.

For example, consider a scenario where it is necessary to define Wi-Fi settings using a laptop connected to the wireless network.

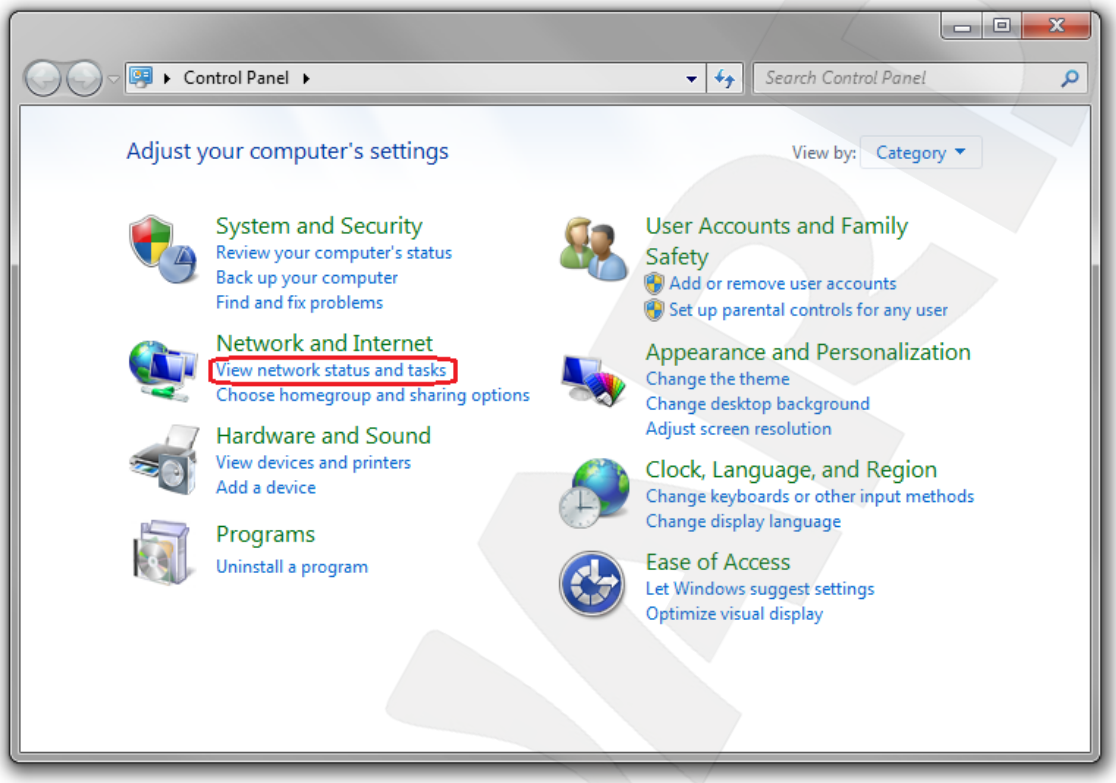
To define the Wi-Fi settings of the laptop, unplug the Ethernet cable from it and connect the laptop to your Wi-Fi network.

Once connected to Wi-Fi, go to ***Start – Control Panel*** (*Pic. 6.1*).



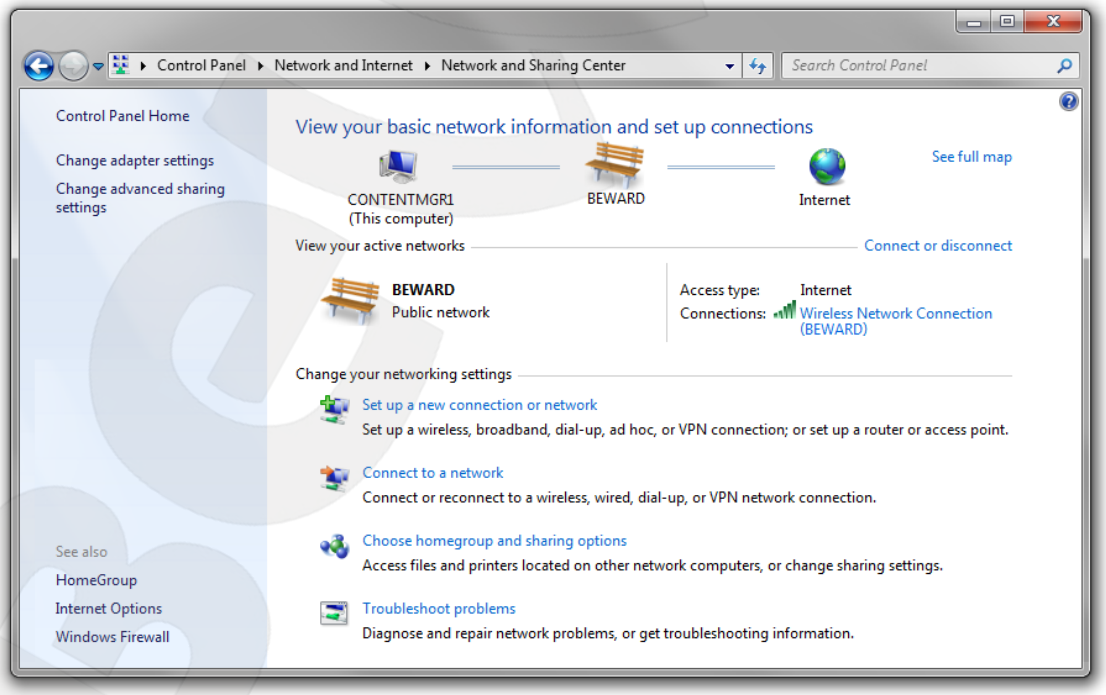
Pic. 6.1

In the opened window, click on the **[View network status and tasks]** in the **[Network and Internet]** section (*Pic. 6.2*).



Pic. 6.2

In the opened window, click on the **[Wireless Network Connection]** (*Pic. 6.3*).


Control Panel ▸ Network and Internet ▸ Network and Sharing Center
Search Control Panel
Control Panel Home
Change adapter settings
Change advanced sharing settings
View your basic network information and set up connections
See full map
CONTENTMGR1 (This computer)
BEWARD
Internet
View your active networks
Connect or disconnect
BEWARD
Public network
Access type: Internet
Connections: Wireless Network Connection (BEWARD)
Change your networking settings
Set up a new connection or network
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Connect to a network
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.
Choose homegroup and sharing options
Access files and printers located on other network computers, or change sharing settings.
Troubleshoot problems
Diagnose and repair network problems, or get troubleshooting information.
See also
HomeGroup
Internet Options
Windows Firewall

Pic. 6.3

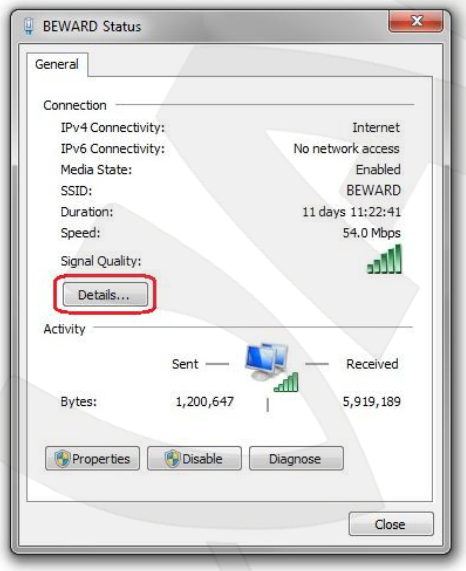
NOTE:

If there are several active networks, choose the one that you are going to connect your camera to.

IMPORTANT!

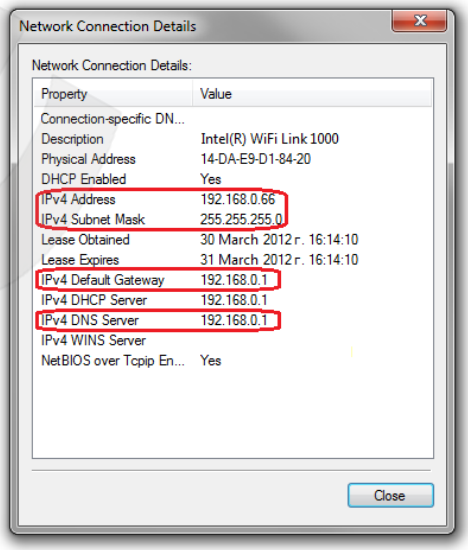
If you do not see the **[Wireless Network Connection]** item, make sure your laptop is connected to a Wi-Fi network. Unplug the Ethernet cable from your laptop and turn the Wi-Fi on. After this, the **[Wireless Network Connection]** item should appear.

The opened window indicates your wireless network name **[SSID]**. Make a note of it; you will need your wireless network name to connect your camera to the wireless network. Click the **[Details]** button (*Pic. 6.4*).



Pic. 6.4

The opened window provides information on your wireless network connection (*Pic. 6.5*).



Pic. 6.5

Make a note of the following data: **[IPv4 Address]**, **[IPv4 Subnet Mask]**, **[IPv4 Default Gateway]**, **[IPv4 DNS Server]**.

Now you must connect your camera to your wireless network. Make sure the camera is connected to a local network (see Chapter 5).

6.3. Configuring the Camera's Wireless Network Parameters through the Web Interface

Access the camera as described in paragraph 5.3.

In the opened window, enter the camera's user name and password (*Pic. 6.6*).

IMPORTANT!

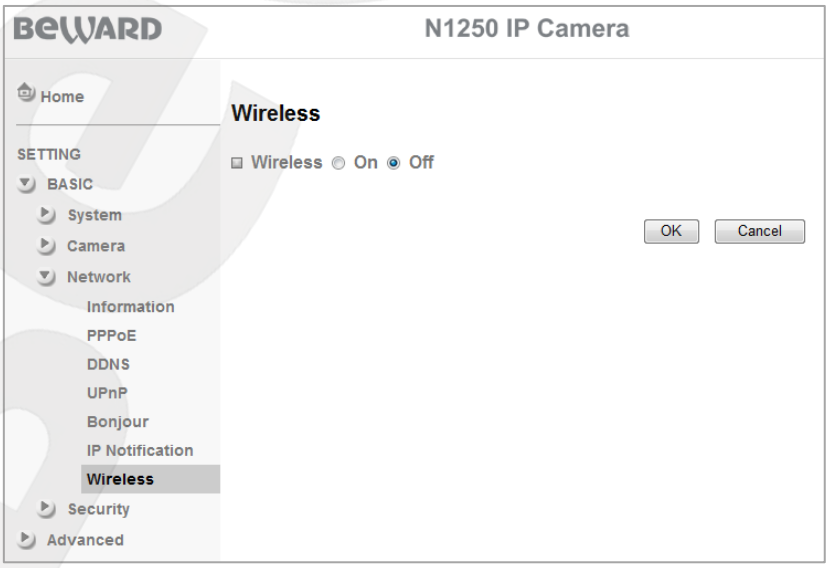
The default user name is **admin**, the default password is **admin**.

Windows Security
The server 192.168.0.99 at N1250 Fixed IP Camera requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
User name
Password
Remember my credentials
OK
Cancel

Pic. 6.6

Once authorization is successful, you should get the camera images via browser. The settings bar is on the left side, the camera images are on the right side.

In the camera's web interface, go to ***SETTING – Basic – Network - Wireless*** (*Pic. 6.7*).

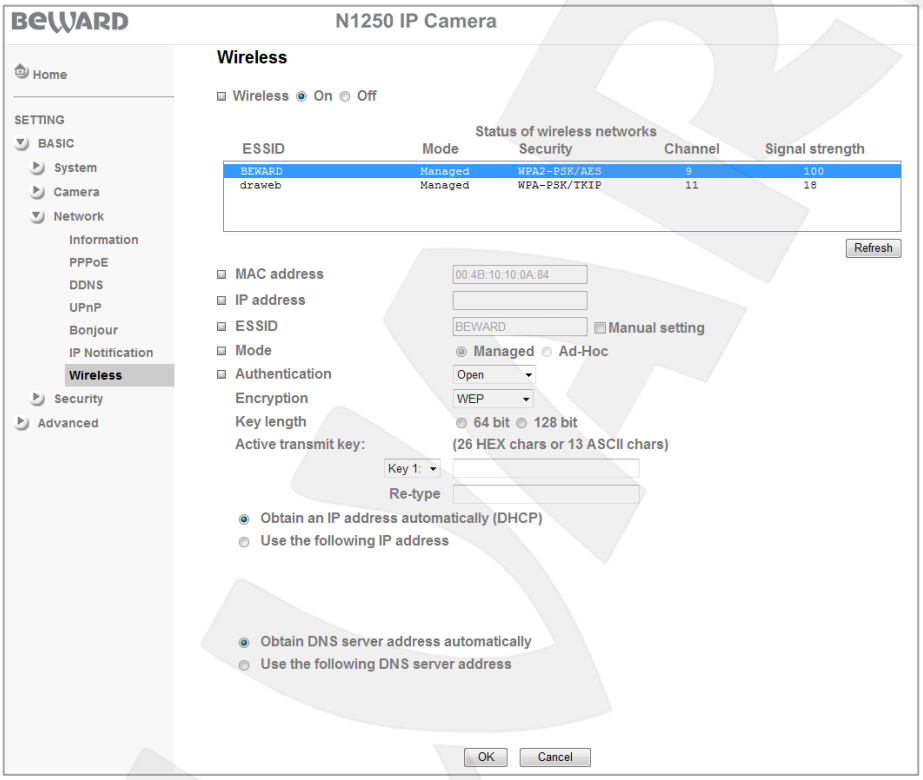


Pic. 6.7

Set the **[Wireless]** to **[On]**. Within a few minutes it should show a list of available wireless networks. Click on your wireless network to select it (*Pic. 6.8*).

NOTE:

To find your wireless network in the **[Status of wireless networks]** box, find a string where the value for the **[ESSID]** column matches the **[ESSID]** value you made a note of before (see paragraph 6.2).



Pic. 6.8

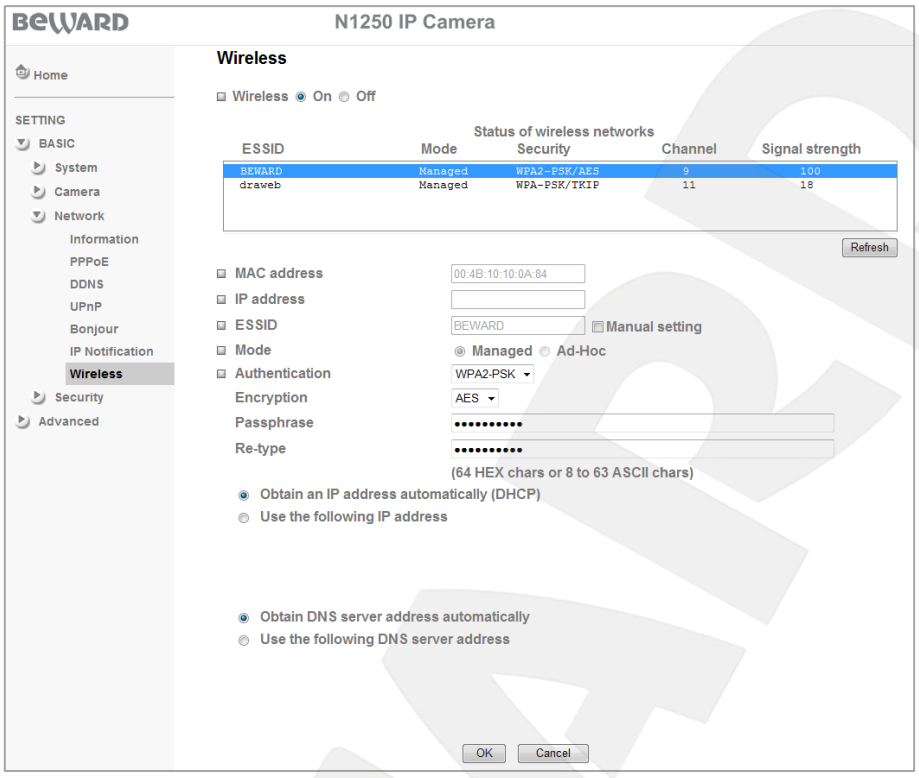
If your wireless network is not found or temporary unavailable, you must enter the value for the **[ESSID]** manually. To do so, check the **[Manual setting]** box.

If you select a wireless network, the **[ESSID]**, **[Authentication]**, **[Encryption]**, **[Key length]** fields will be filled automatically. When setting manually, you need to know the values for the following parameters: **[Authentication]**, **[Encryption]**, **[Key length]**, **[Passphrase]** that are used in the wireless network. If you enter incorrect values, the connection will be impossible.

After you selected your wireless network and if the selected network is password-protected, you must enter a password to connect to it. Enter the password in the **[Passphrase]** field and re-type it in the **[Re-type]** field (*Pic. 6.9*).

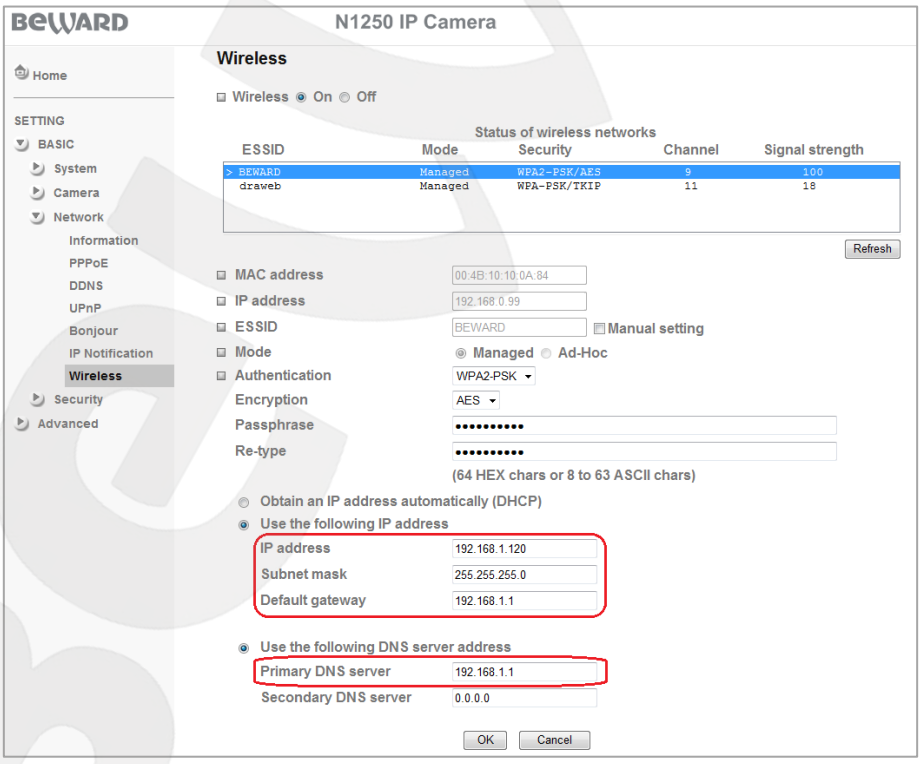
IMPORTANT!

Use caution when entering the data required for connection to a wireless network. If you enter incorrect data, the camera cannot establish the connection.



Pic. 6.9

Select the **[Use the following IP address]** and the **[Use the following DNS server address]** options (*Pic. 6.10*).



Pic. 6.10

In these fields, enter the values according to your wireless network configuration.

IP address: enter an IP address in the same subnet as the IP address you made a note of in paragraph 6.3. The IP address must be different from other network devices.

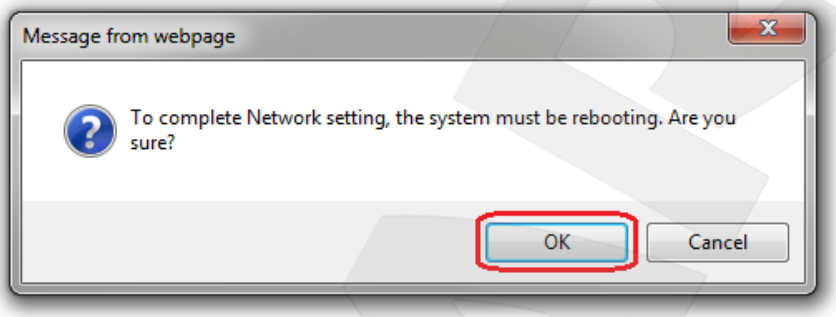
Subnet mask: enter a subnet mask address.

Default gateway: enter a default gateway address.

Primary DNS server: enter a primary DNS server.

Click **[OK]** to save the changes.

In the opened window, click **[OK]** (*Pic. 6.11*).

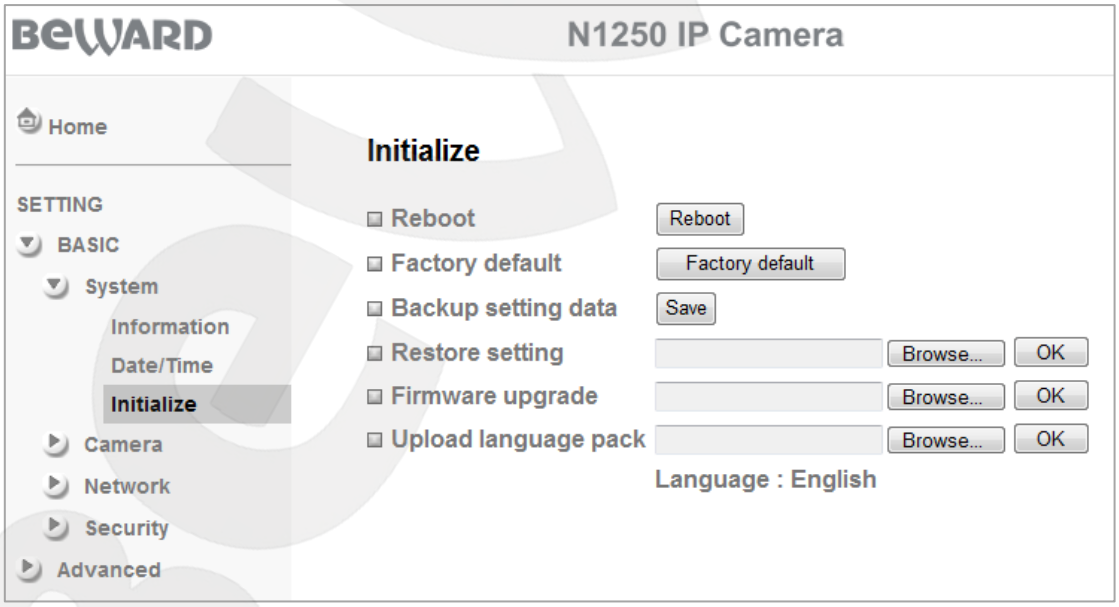


Pic. 6.11

IMPORTANT!

You must reboot the camera for the changes to take effect.

To reboot the camera, go to ***SETTING – Basic – System – Initialize*** (*Pic. 6.12*).



Pic. 6.12

The camera takes 2-3 minutes to reboot.

This completes the setting up of the wireless connection.

6.4. Verifying the Wireless Network Configuration

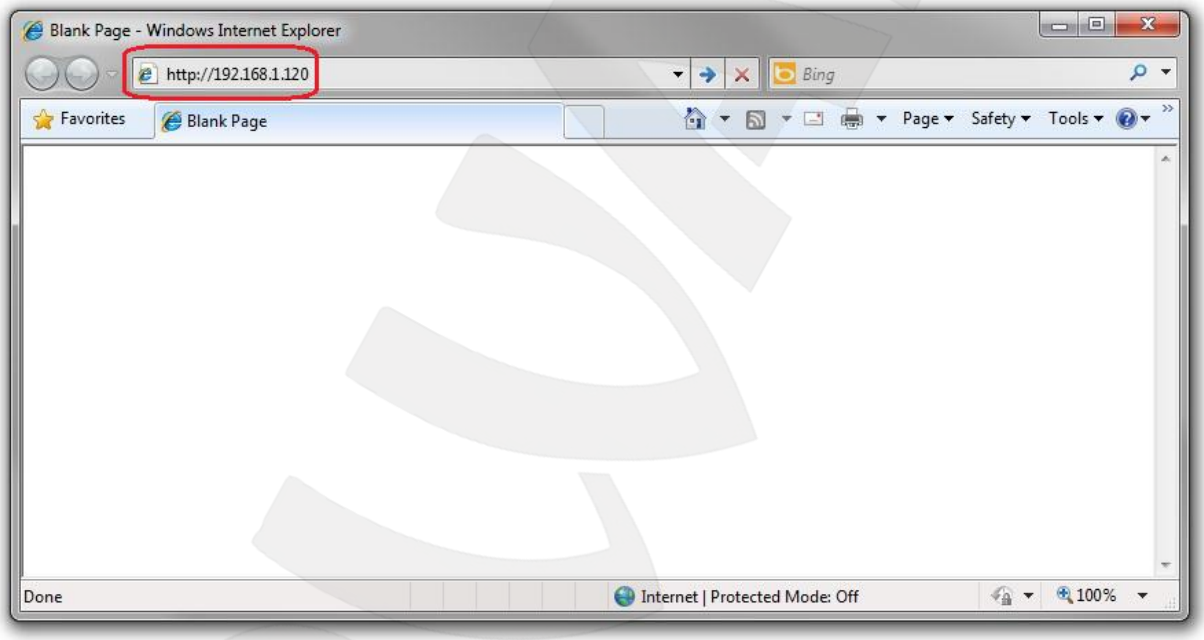
To verify the wireless network settings of your camera and your computer, you must access the camera through Internet Explorer.

Launch Internet Explorer. To do so, go to ***Start – All Programs*** and click **[Internet Explorer]**.

In the address field, enter the IP address for wireless connection that is assigned to your camera in paragraph 6.3 (*Pic. 6.13*).

IMPORTANT!

To verify the wireless network configuration, use the IP address that was assigned to your camera in paragraph 6.3.



Pic. 6.13

Enter the camera's user name and password, then click **[OK]** (*Pic. 6.14*).

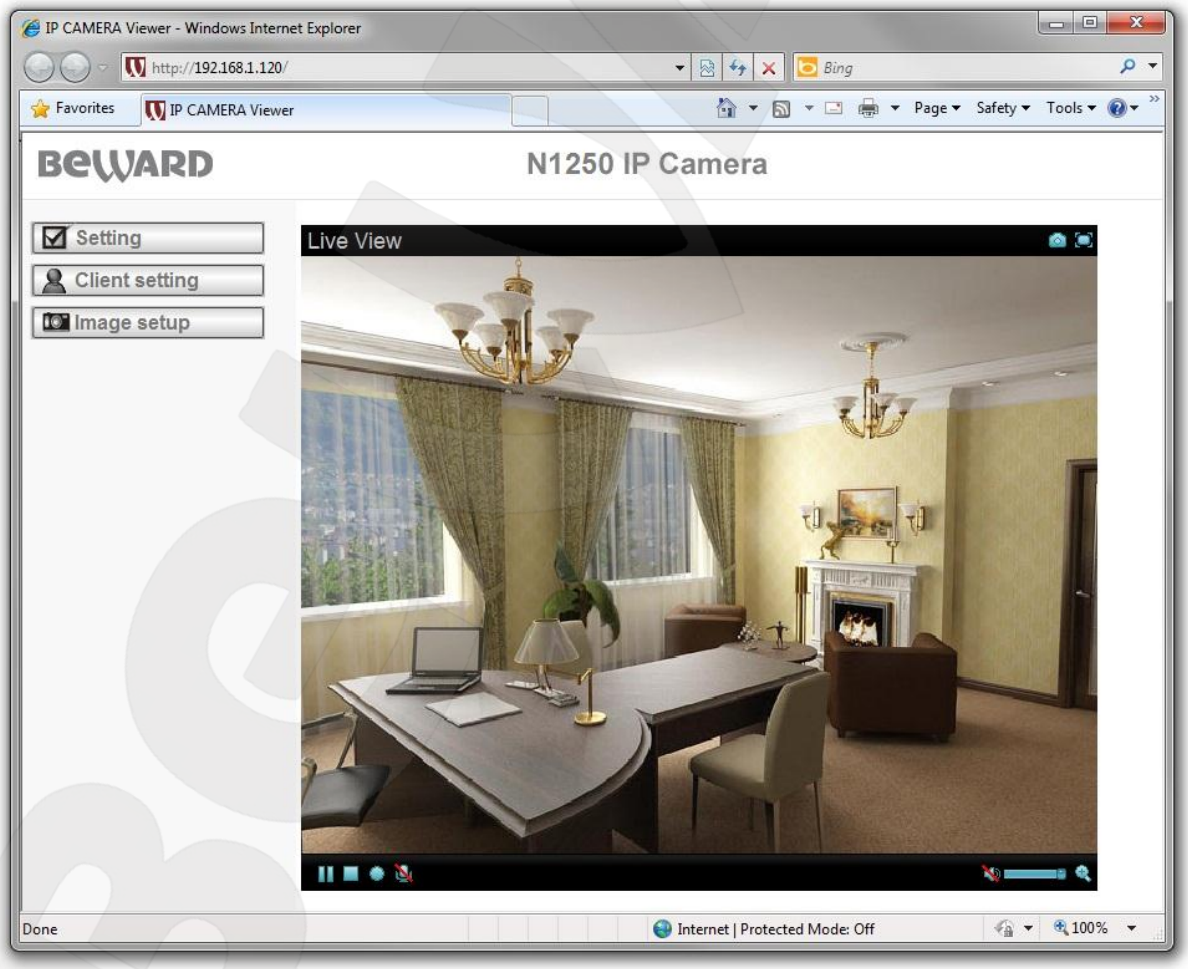
IMPORTANT!

The default user name is **admin**, the default password is **admin**.

Windows Security
The server 192.168.1.120 at N1250 Fixed IP Camera requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
User name
Password
Remember my credentials
OK
Cancel

Pic. 6.14

If everything was done correctly, you should get the camera images via browser. The settings bar is on the left side, the camera images are on the right side (*Pic. 6.15*).



Pic. 6.15

This completes the setting up of the wireless connection.

Chapter 7. Accessing the Camera over the Internet

7.1. Overview of Internet Access to the Camera

When installing an IP camera in apartments, a cottage, or an office, most users want to be able to access the camera and view the images over a local network in the apartments, a cottage, or an office as well as over the Internet.

This requires a router to make your camera, your computer and other network devices work together on the same network. Besides, your router must support wireless connectivity in order to use Wi-Fi.

There are three ways to connect this IP camera to the Internet:

- There is an external static IP address or PPPoE connection. Such an IP address (or PPPoE connection) can be used to connect only one camera to view the images over the Internet. This type of networking does not allow sharing a single IP address among several devices.
- There is an external static IP address that is used to connect a LAN to the Internet and assigned to one or several cameras to view the images over the Internet. This type of networking requires the use of a router. Therefore, the number of connected cameras depends on how many ports are on the router.
- There is a dynamic IP address, which is a temporary address and can change during a session. This type of networking allows connecting multiple cameras to view the images over the Internet regardless of the IP address they are assigned and requires the use of dynamic DNS services.

The possible ways of accessing the camera over the Internet are covered later in this manual.

7.2. Using an External Static IP Address or PPPoE Connection

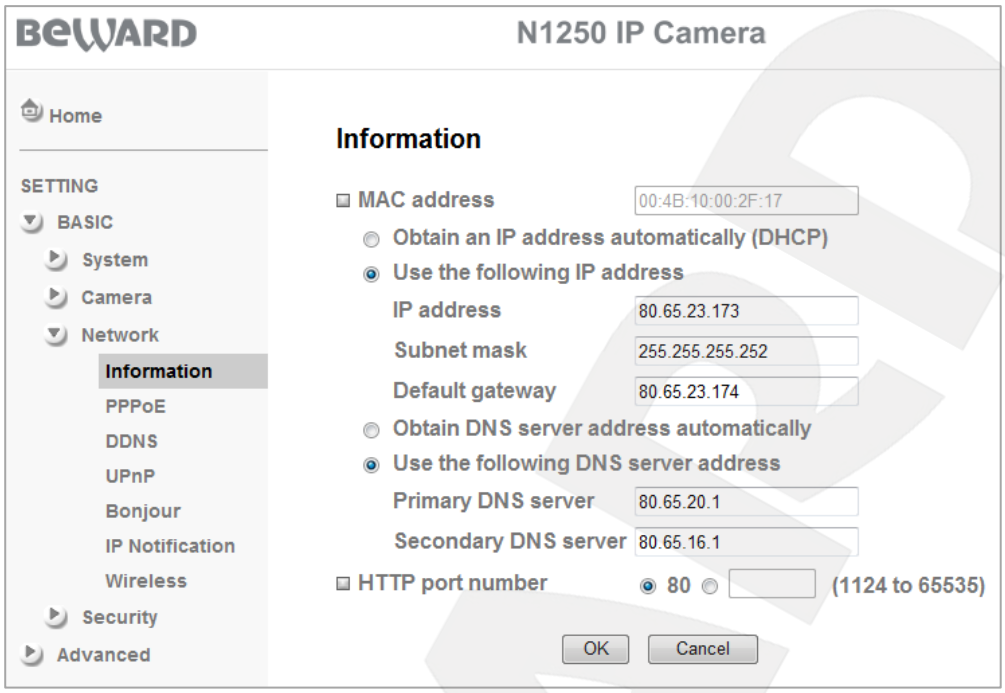
7.2.1. Using an External Static IP Address

When connecting to the Internet, you must change the network settings of the IP camera according to the settings provided by your ISP. Most ISP's provide the following: an IP address, a subnet mask, a network gateway, and a DNS server address.

To access the IP camera over the Internet using a static IP address, follow the steps below:

Step 1: connect the IP camera to your computer directly.

Step 2: change the network settings of the IP camera (see paragraph 5.5) according to the settings provided by your ISP (*Pic. 7.1*).



Pic. 7.1

Step 3: connect the IP camera to the Ethernet network.

If everything is configured properly, the camera should be available over the Internet.

In the provided example, the following settings were used:

IP address: 80.65.23.173

Subnet mask: 255.255.255.252

Default gateway: 80.65.23.174

Primary DNS server: 80.65.20.1

Secondary DNS server: 80.65.16.1

To connect to the camera over the Internet, enter the following in the address field of your browser: http://<IP>:<port>/, where <IP> is the IP address of the camera, <port> is the port number that is used for HTTP connection to the camera (the default value is 80). In the provided example, the following should be entered in the address field: http://80.65.23.173.

NOTE:

You do not need to enter a port number if you are connecting through the default HTTP port 80.

7.2.2. Using a PPPoE Connection

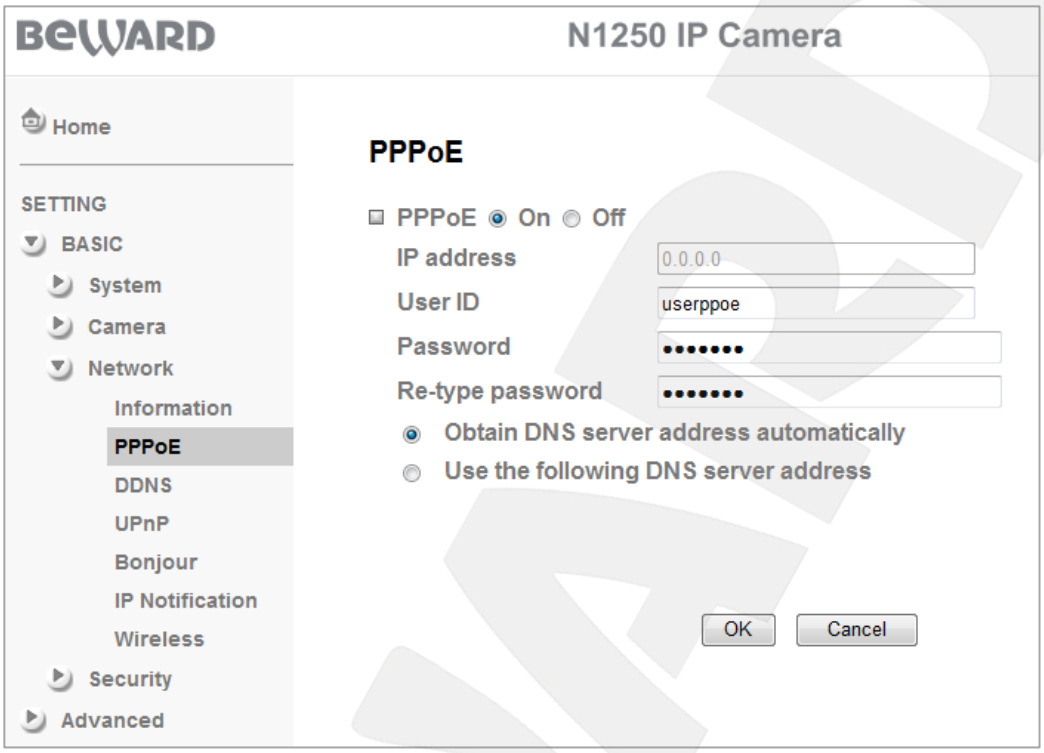
If your IPS cannot provide a static IP address, you can use a PPPoE connection to access the camera over the Internet. To access the camera over a PPPoE connection, your IPS should provide the following information: a username and a password.

The N1250 supports PPPoE connection; follow the steps below to establish the connection:

Step 1: connect the IP camera to your computer directly.

Step 2: go to ***SETTING – Basic – Network – PPPoE***.

Step 3: enter the network settings provided by your ISP (*Pic. 7.2*).



Pic. 7.2

Step 4: click **[OK]** to save the changes.

IMPORTANT!

After you configure the network settings, you must reboot the camera.

Step 5: connect the IP camera to the Ethernet network.

IMPORTANT!

After being connected to the Ethernet, the camera is available at the IP address assigned by your ISP. To access the camera, you can use DynDNS service, which allows accessing the camera over the Internet when using a PPPoE connection (see N1250 Operations User Manual).

To connect to the camera over the Internet, enter the following in the address field of your browser: http://<IP>:<port>/, where <IP> is the IP address of the camera that is used for PPPoE connection to the camera, <port> is the port number that is used for HTTP connection to the camera (the default value is 80).

NOTE:

You do not need to enter a port number if you are connecting through the default HTTP port 80.

7.3. Internet Access to the Camera on a Local Network

When a leased line or ADSL is used for Internet access, a router is necessary to establish a local network.

IMPORTANT!
This type of connection requires a static public IP address. Usually ISPs provide a dynamic internal IP address, which can be used only inside the LAN. Contact your ISP to determine your IP address.

To access the camera over the Internet, use the IP address provided by your ISP (IP address of the router's WAN port) and a certain port number.

IMPORTANT!
When accessing over the Internet, you should note that all cameras inside the local network have the same public IP address. To access the cameras through the same IP address, you must specify a unique HTTP port number for each camera.

In this case, you should do the following:

- Configure the network settings of the IP cameras to match the LAN settings (see paragraph 5.5 for wired connection or paragraph 6.3 for wireless connection).
- Allow external connections. This can be done by configuring the **"Virtual server"**, which allows directing any data that reach a predefined WAN port from the Internet so that the data are forwarded to the camera's IP address on the local network. Most modern routers have the **"Virtual server"** option.

To provide Internet access to your camera(s) through a router, you need to configure the port mapping using one of the following methods:

- Using UPnP in your camera and your router.
- Manually configuring a routing table.

7.3.1. Using the UPnP Option

Before using UPnP, make sure your router supports forwarding between LAN and WAN networks. If so, follow the steps below to set up the Internet access to your camera:

- Enable UPnP on your router and configure it.

IMPORTANT!
Some routers do not support UPnP forwarding between LAN and WAN networks. Before configuring, make sure your router supports this option. If not, your router requires additional configuration.

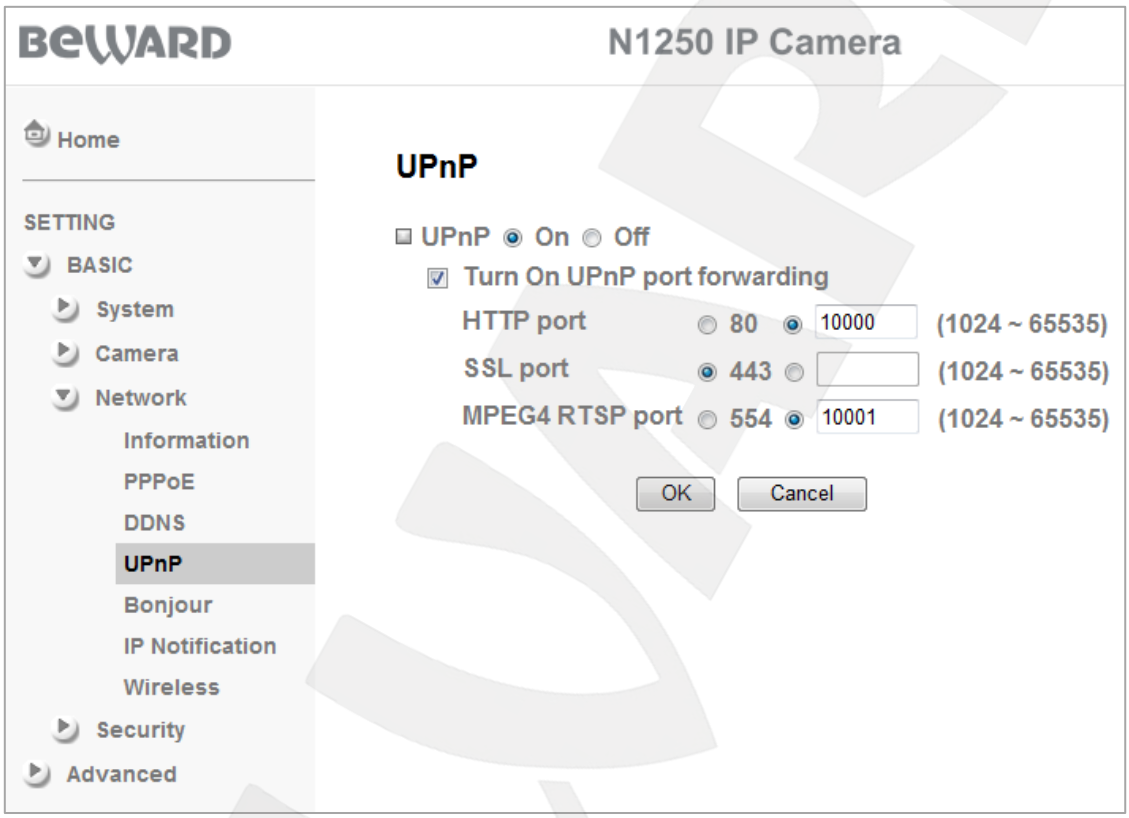
- Enable UPnP on your camera and configure it.

See your router's user manual for details on how to enable and configure the UPnP.

To enable and configure UPnP on your camera, follow the steps below:

Step 1: enable UPnP on your camera. To do so, go to: ***SETTING – Basic – Network – UPnP***.

Step 2: check the **[Turn On UPnP port forwarding]** (*Pic. 7.3*).



Pic. 7.3

Step 3: in the **[HTTP port]** field, enter the HTTP port number that you want to use to access the camera over the Internet. For example, the value of the port you assigned is 10000. In this case, port 80 is used to access the camera over a local network and port 10000 is used to access the camera over the Internet. The default value is 80.

Step 4: in the **[RTSP port]** field, enter the RTSP port number that you want to use to access the camera over the Internet.

Step 5: click **[OK]** to save the changes.

IMPORTANT:
You must reboot the camera for the changes to take effect.

IMPORTANT:
To use port forwarding, the port number values of the camera must match the router port numbers.

To access the camera over the Internet, use the IP address provided by your ISP (IP address of the router's WAN port) and a certain port number.

For instance, the WAN IP address is 77.108.73.169 and the HTTP port number is 10000. In this case, you need to enter the following in the address field of your browser: http://77.108.73.169:10000/.

To use several cameras, you need to specify a unique port number for each camera and configure the forwarding.

7.3.2. Manual Port Forwarding

If your router does not support UPnP, you must manually configure your router to forward the ports. For this example, we use Planet XRT-412 router (almost identical to D-Link DI-604) to connect the IP camera.

For example, consider a scenario where you want to set up one camera to view the images over the Internet. You need to configure your router and your IP camera so that it can be accessed over the Internet as well as over your LAN.

IMPORTANT!

This type of connection requires a static public IP address. Usually ISP's provide a dynamic internal IP address, which can be used only inside the LAN. Contact your ISP to determine your IP address.

For example, consider Internet and LAN connections are configured on your router. The router is assigned a static public IP address provided by the ISP: 77.108.73.169.

The IP address range used on the local network is 192.168.0.1 – 192.168.0.255 and the router's IP address is 192.168.0.1. For this example, we use a computer connected to this local network.

It is necessary to configure the network settings of the camera (the camera's IP address is 192.168.0.99). To access the camera over the Internet, you need to configure its ports. On the local network, we use the camera's IP address to access it. To access the camera settings and view the images, the following default port numbers are used: HTTP port – 80, RTSP port – 554.

IMPORTANT!

When accessing over the Internet, you should note that all cameras inside the local network have the same public IP address. To access the cameras through the same IP address, you must specify a unique HTTP port number for each camera.

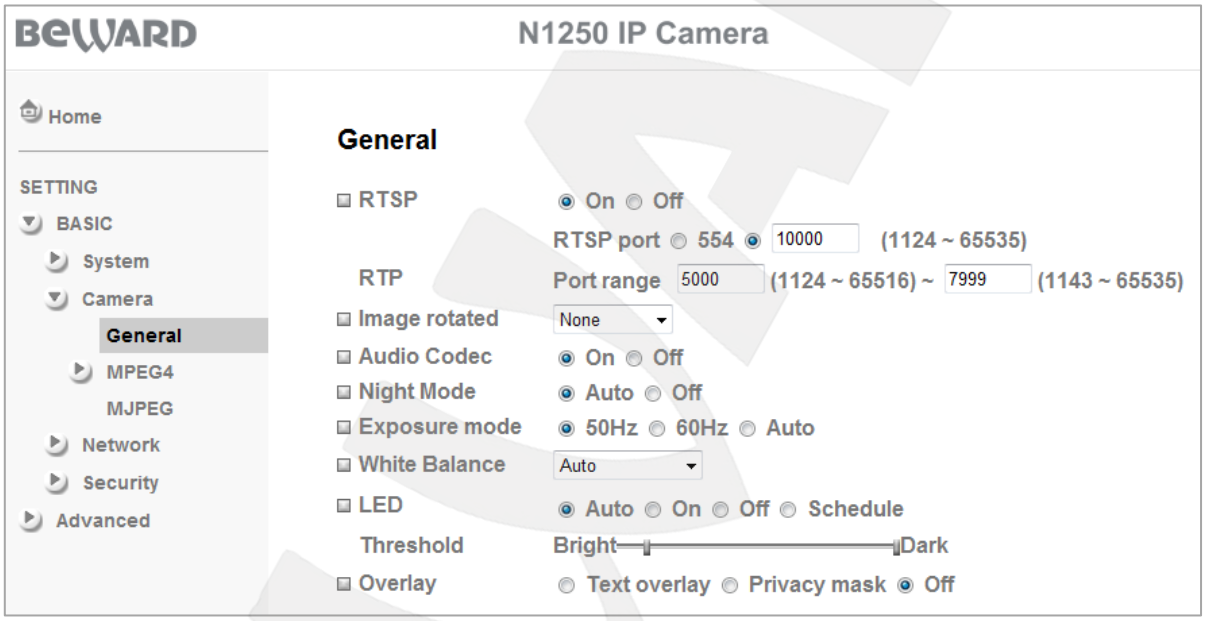
To change the ports of the camera, follow these steps:

IMPORTANT!

You can share the same HTTP port between your IP cameras using port forwarding on the virtual server; however, you must specify a unique RTSP port number for each camera in order to access them over the Internet.

Step 1: connect to your camera's web interface and go to ***SETTING – Basic – Camera – General***.

Step 2: in the **[RTSP port]** field, enter the RTSP port number that is different than the default port number. For this example, we use the RTSP port 10000 (*Pic. 7.4*).



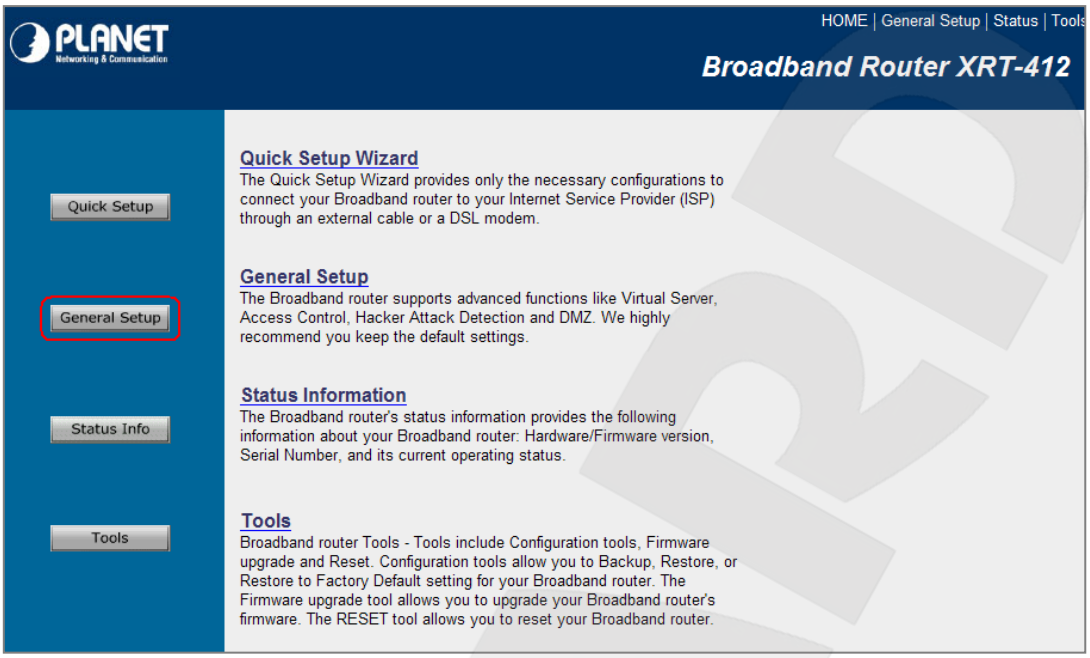
Pic. 7.4

Step 3: click **[OK]** to save the changes.

If there is another camera on the network, you can configure it as follows: HTTP port 80, RTSP port 10001.

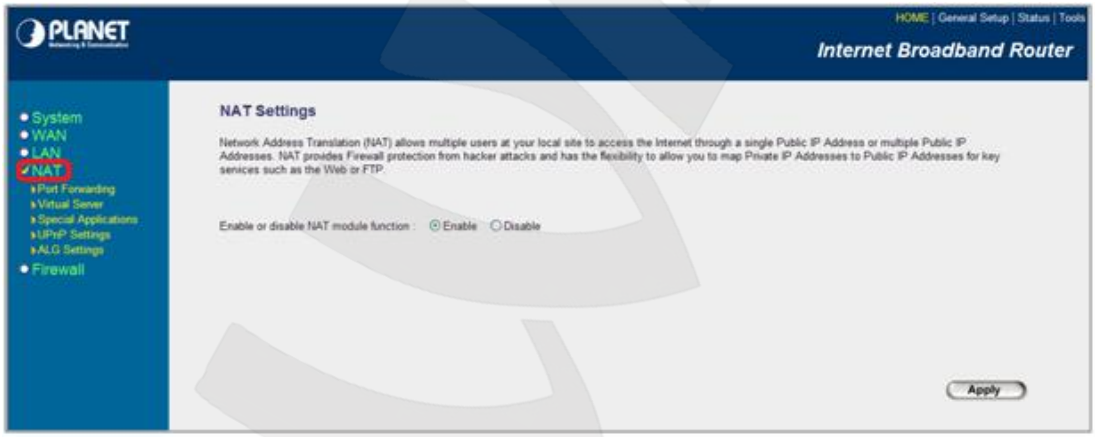
The camera configuration is complete. Now you need to configure your router to make the camera accessible over the Internet. To do so, follow the steps below:

Step 1: enter the IP address of your router in the browser address field (in the provided example, the address is 192.168.0.1). In the appeared window, enter your username and your password. After successful authorization, the router settings page appears (*Pic. 7.5*).


PLANET
Networking & Communication
HOME | General Setup | Status | Tools
Broadband Router XRT-412
Quick Setup
General Setup
Status Info
Tools
Quick Setup Wizard
The Quick Setup Wizard provides only the necessary configurations to connect your Broadband router to your Internet Service Provider (ISP) through an external cable or a DSL modem.
General Setup
The Broadband router supports advanced functions like Virtual Server, Access Control, Hacker Attack Detection and DMZ. We highly recommend you keep the default settings.
Status Information
The Broadband router's status information provides the following information about your Broadband router: Hardware/Firmware version, Serial Number, and its current operating status.
Tools
Broadband router Tools - Tools include Configuration tools, Firmware upgrade and Reset. Configuration tools allow you to Backup, Restore, or Restore to Factory Default setting for your Broadband router. The Firmware upgrade tool allows you to upgrade your Broadband router's firmware. The RESET tool allows you to reset your Broadband router.

Pic. 7.5

Step 2: click the **[General Setup]**. Click the **[NAT]** in the opened menu (*Pic. 7.6*).


PLANET
HOME | General Setup | Status | Tools
Internet Broadband Router
System
WAN
LAN
NAT
Port Forwarding
Virtual Server
Special Applications
UPnP Settings
ALG Settings
Firewall
NAT Settings
Network Address Translation (NAT) allows multiple users at your local site to access the Internet through a single Public IP Address or multiple Public IP Addresses. NAT provides Firewall protection from hacker attacks and has the flexibility to allow you to map Private IP Addresses to Public IP Addresses for key services such as the Web or FTP.
Enable or disable NAT module function : Enable Disable
Apply

Pic. 7.6

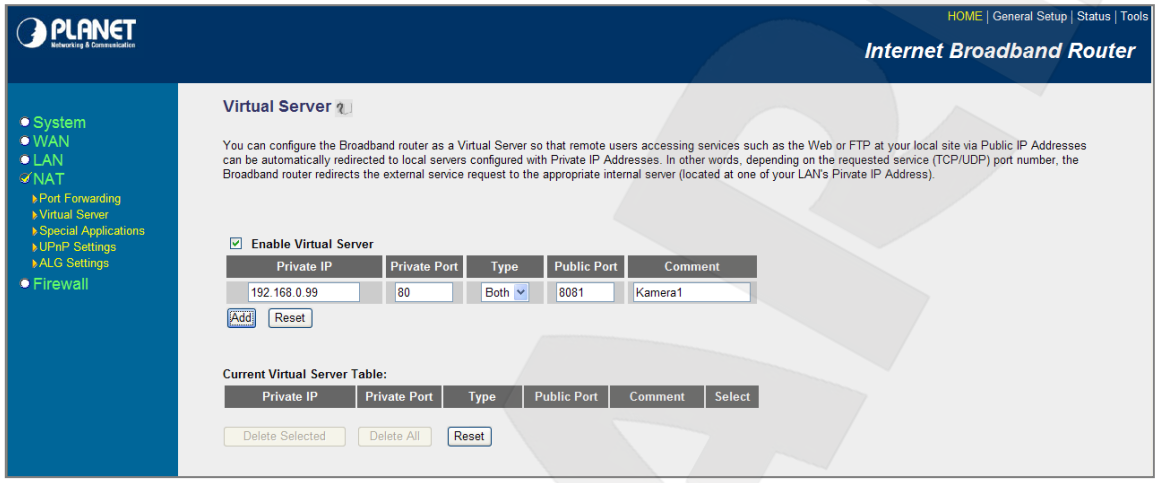
Step 3: in the opened menu, select the **[Virtual server]** (*Pic. 7.7*).

PLANET
HOME | General Setup | Status | Tools
Internet Broadband Router
System
WAN
LAN
NAT
Port Forwarding
Virtual Server
Special Applications
UPnP Settings
ALG Settings
Firewall
Virtual Server
You can configure the Broadband router as a Virtual Server so that remote users accessing services such as the Web or FTP at your local site via Public IP Addresses can be automatically redirected to local servers configured with Private IP Addresses. In other words, depending on the requested service (TCP/UDP) port number, the Broadband router redirects the external service request to the appropriate internal server (located at one of your LAN's Private IP Address).
Enable Virtual Server
Private IP
Private Port
Type
Public Port
Comment
Both
Add
Reset
Current Virtual Server Table:
Private IP
Private Port
Type
Public Port
Comment
Select
Delete Selected
Delete All
Reset

Pic. 7.7

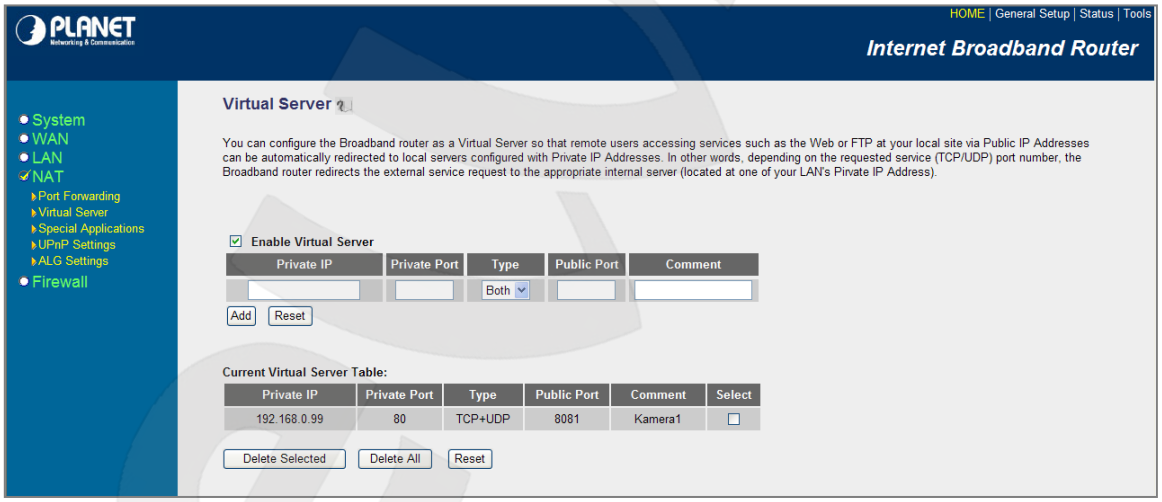
Step 4: turn on the virtual server. To do so, select the **[Enable Virtual Server]**.

Step 5: create the network address translation rules (*Pic. 7.8*). Enter the camera IP address and the HTTP port 80. Set the traffic type to **"Both"**, which allows both UDP and TCP translation. Enter a port number to access the camera over the Internet (for the provided example, the port is 8081). You can also make a comment (optional).



Pic. 7.8

Step 6: click the **[Add]** button (this adds the created rule to the routing table). The rule is added (*Pic. 7.9*).

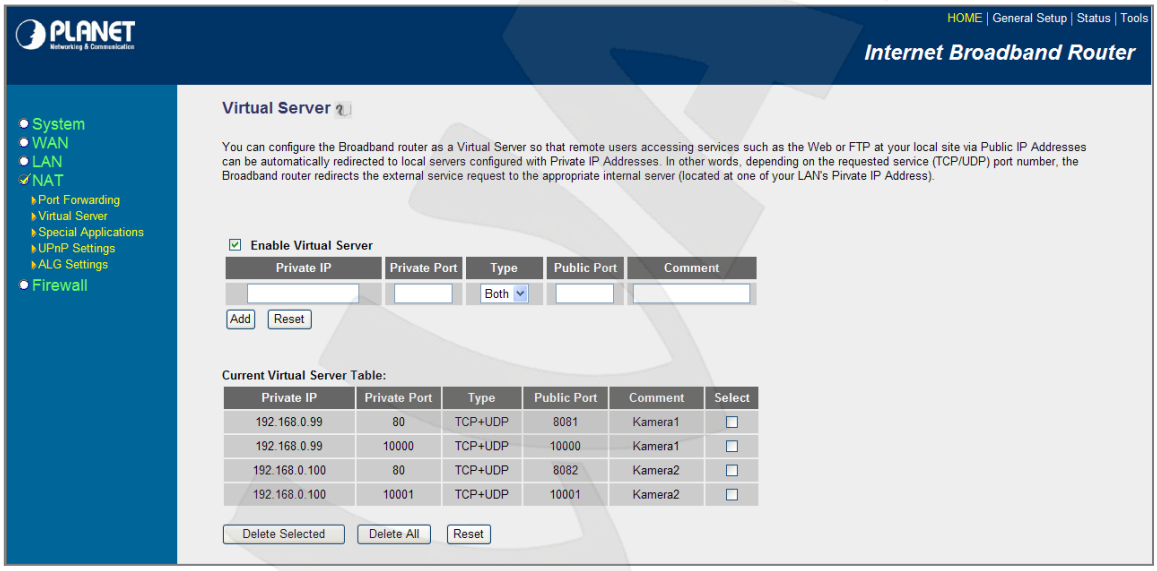


Pic. 7.9

Step 7: repeat to create a forwarding rule for RTSP (*Pic. 7.10*).

Pic. 7.10

Step 8: repeat to create a forwarding rule for other cameras (*Pic. 7.11*).



Pic. 7.11

The router configuration is complete.

IMPORTANT!

You can use the virtual server to map the HTTP ports (for example, the port 80 of the camera 1 is translated to 8080; the port 80 of the camera 2 is translated to 8081). However, you must specify a unique RTSP port number for each camera, which can be mapped to the same port (for example, the port 10000 of the camera 1 is translated to 10000; the port 10001 of the camera 2 is translated to 10001).

To access the camera over the Internet, use the IP address provided by your ISP (IP address of the router's WAN port) and a certain HTTP port number.

For instance, the WAN IP address is 77.108.73.169 and the HTTP port number is 8081. In this case, you need to enter the following in the address field of your browser: http://77.108.73.169:8081/.

To use several cameras, you need to specify a unique port number for each camera and configure the forwarding.

7.4. Accessing the Camera over the Internet Using DynDNS service

7.4.1. Overview of Internet Access to Cameras Using DynDNS service

If a computer is assigned a temporary IP address changing from one session to the next, it means the computer is assigned a dynamic IP address. Many ISPs use this type of addressing. However, in order to access a device over the Internet any time, you need to contact your ISP and ask them to assign a static IP address, or use a Dynamic DNS (DDNS) service.

The Dynamic DNS service allows you to make your cameras accessible over the Internet even though they are assigned a dynamic IP address, which changes from time to time. All external users can always access the camera using its domain name.

The Dynamic DNS service allows you to access your camera over the Internet using its domain name, which might be similar to www.camera1.dvrdns.org, instead of an IP address.

To do so, create an account at the DDNS server website such as www.dyndns.org, enter your camera's current IP address and choose a domain name that will be used to access your camera.

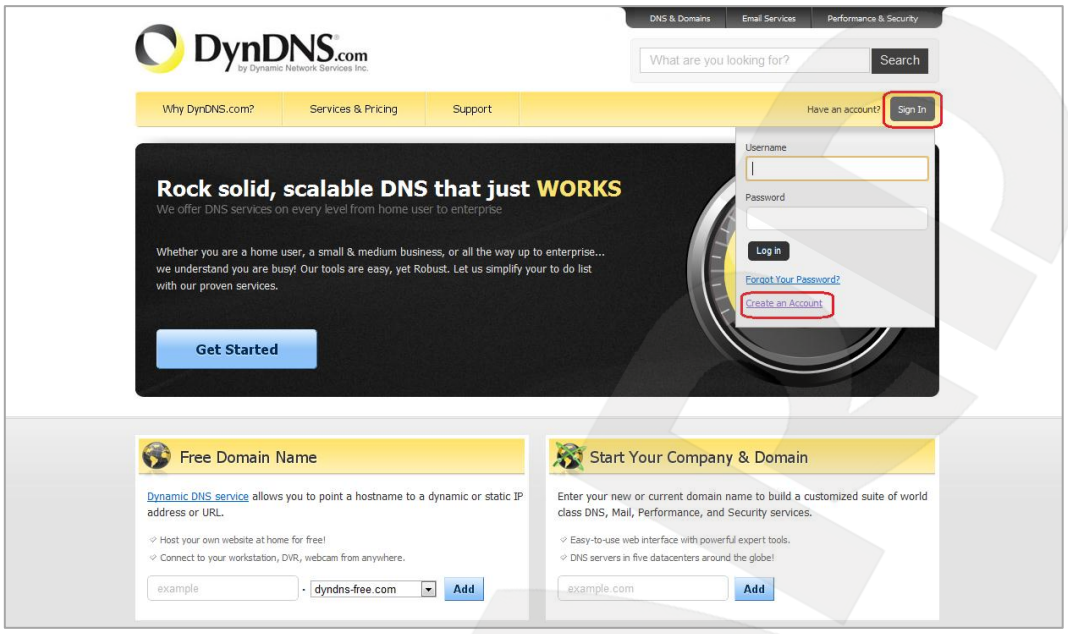
When either the IP address is changed or a new connection is established, the ISP assigns your camera a new IP address. Then it is processed by the software built into the camera and sent to the DDNS server. The DDNS provider ties the domain name you chose to the dynamic IP address.

For this example, we use the following DDNS provider: www.dyndns.com. To tie a domain name to the IP address of your camera, follow the steps below:

- Create an account at www.dyndns.com – **[Account]**.
- Choose a domain name for your camera – **[Hostname]**. You can use any domain name that is not already being used. For this example, we use camera184 and thus have the following domain name: www.camera184.dvrdns.org.
- Set up your equipment.

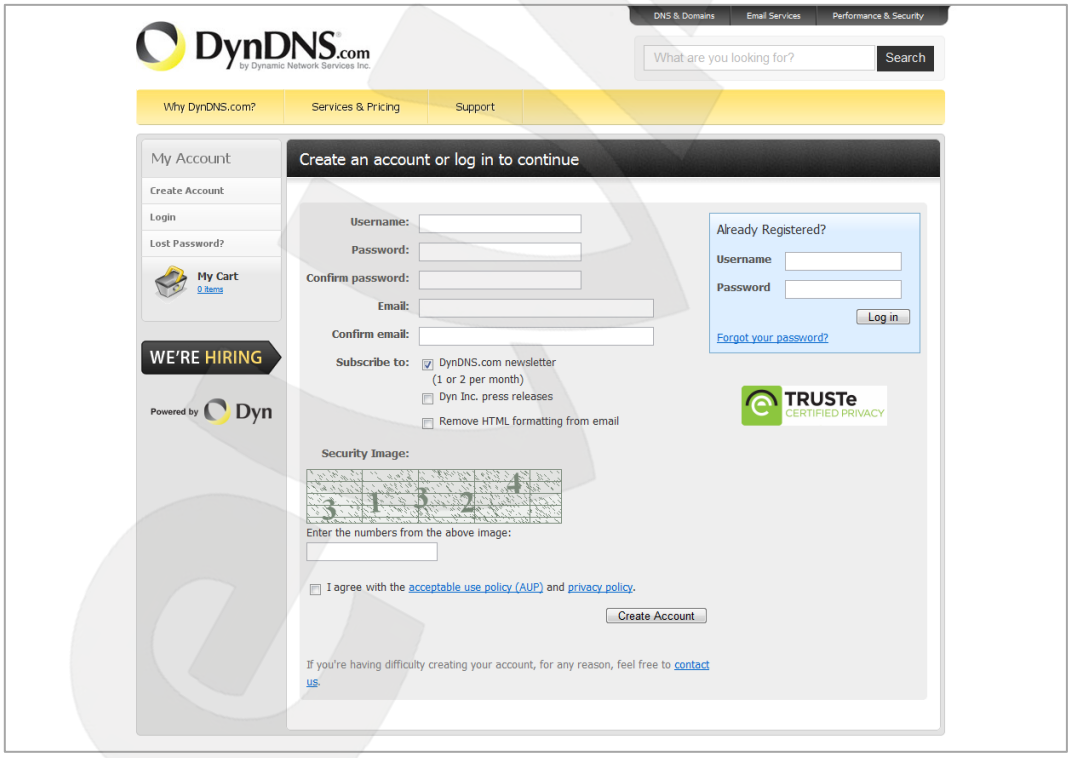
7.4.2. Creating an Account at DynDNS Service

Step 1: open your browser and go to www.dyndns.com, click the **[Sign In]** in the upper right corner and select the **[Create an Account]** in the drop-down menu (*Pic. 7.12*).



Pic. 7.12

Next you will see the Create an account page (*Pic. 7.13*).



Pic. 7.13

Step 2: enter a username that is not already being used (the **[Username]** field) and a password (the **[Password]** and **[Confirm password]** fields).

NOTE:

You need to confirm the password to ensure that there are no typing mistakes. You must enter the same password in both fields.

In the **[Email]** and **[Confirm email]** fields, enter your e-mail address. You will receive a confirmation e-mail to the specified address. An e-mail address can only be associated with one domain name.

NOTE:
A fee is required to associate one e-mail address with multiple domain names.

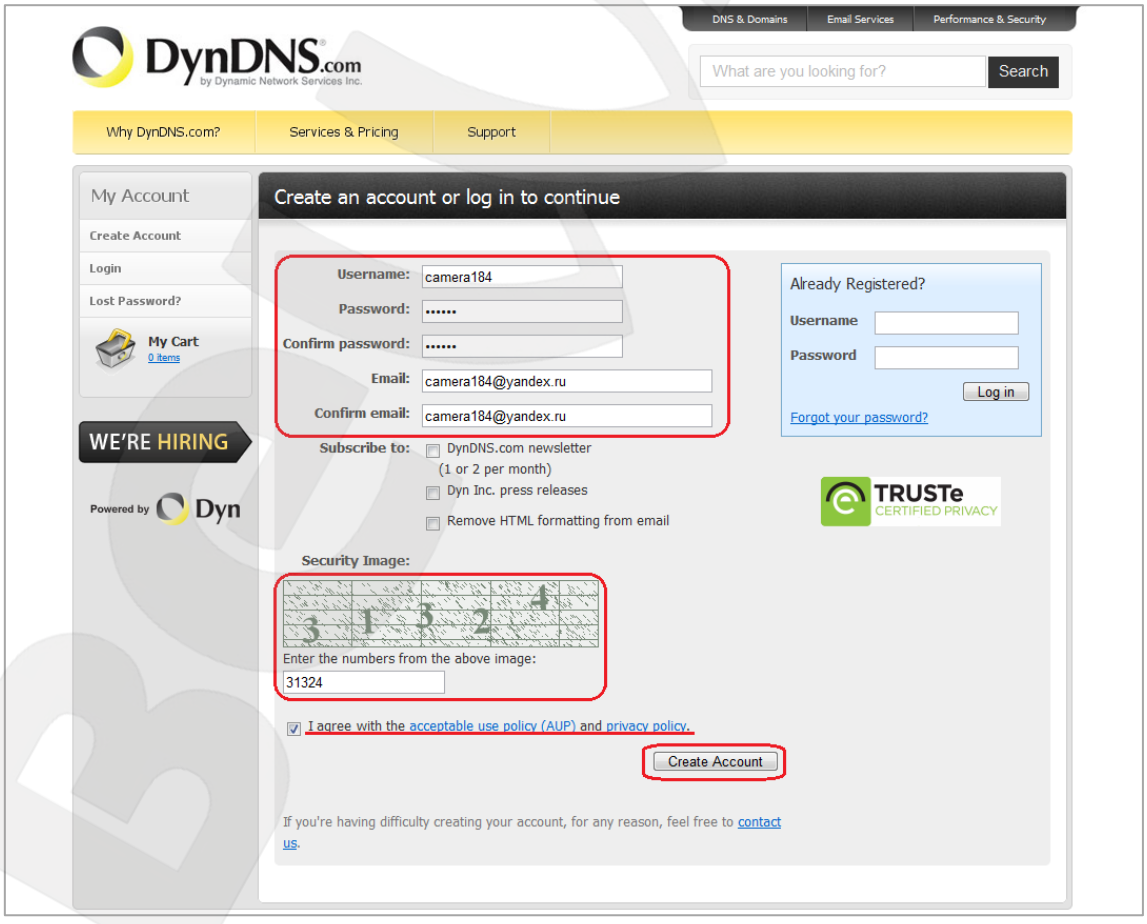
NOTE:
You need to confirm the e-mail address to ensure that there are no typing mistakes. You must enter the same e-mail address in both fields.

Check the **[DynDNS.com newsletter]** box to get newsletters from DynDNS or uncheck this box if you wish to cancel newsletters.

Enter the numbers from the image and check the **[I agree with the acceptable use policy (AUP) and privacy policy]** box, which means that you agree with AUP and privacy policy to create one free account.

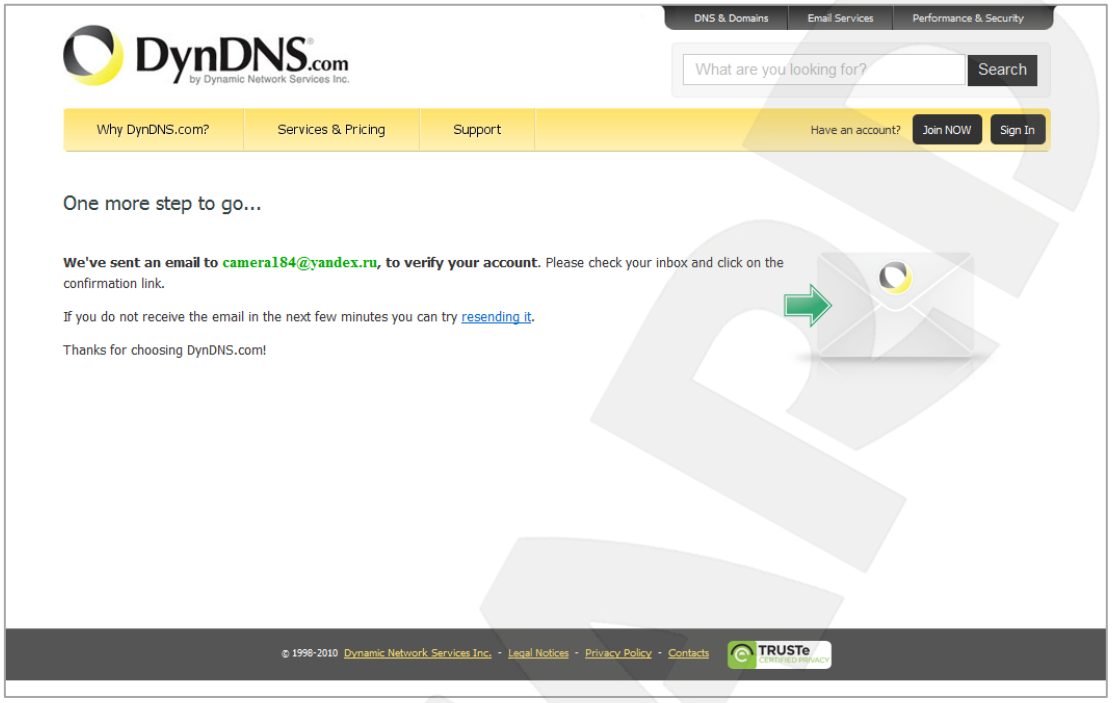
For this example, we use **[Username]** – camera184, **[Email]** - camera184@yandex.ru.

Click the **[Create Account]** button to complete the registration process (*Pic. 7.14*).



Pic. 7.14

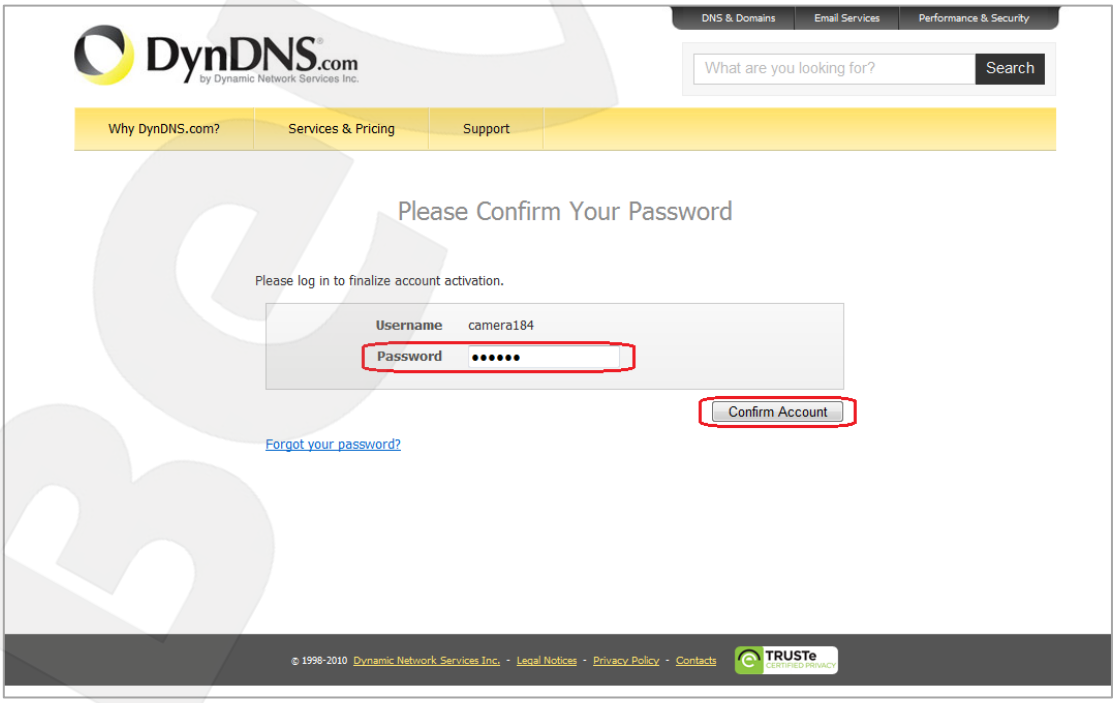
Step 3: if everything is correct, you will see the **[One more step to go...]** page (*Pic. 7.15*).


DynDNS.com
by Dynamic Network Services Inc.
DNS & Domains
Email Services
Performance & Security
What are you looking for?
Search
Why DynDNS.com?
Services & Pricing
Support
Have an account?
Join NOW
Sign In
One more step to go...
We've sent an email to camera184@yandex.ru, to verify your account. Please check your inbox and click on the confirmation link.
If you do not receive the email in the next few minutes you can try resending it.
Thanks for choosing DynDNS.com!
© 1998-2010 Dynamic Network Services Inc. - Legal Notices - Privacy Policy - Contacts
TRUSTe

Pic. 7.15

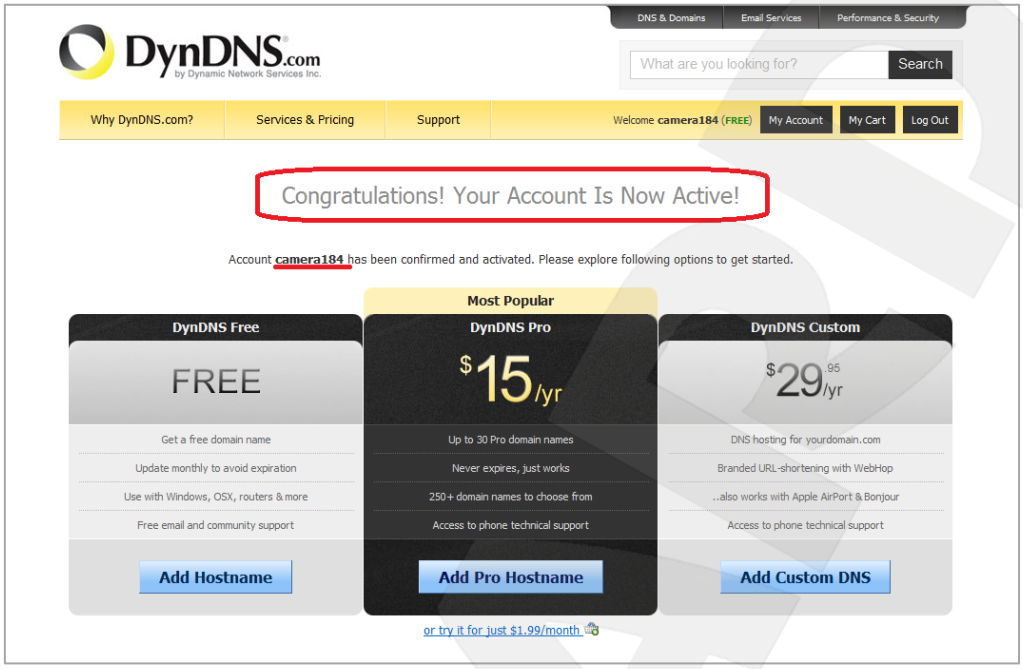
Step 4: you will receive an email confirmation message from «DynDNS Support» (the e-mail address is support@dyndns.com) to the email address you specified in your registration form. Click the link to confirm the registration and to activate your account.

After clicking the link from the e-mail, you will be sent to the confirmation page to activate your account. Enter your username and your password to log in and click the **[Confirm Account]** button (*Pic. 7.16*).



Pic. 7.16

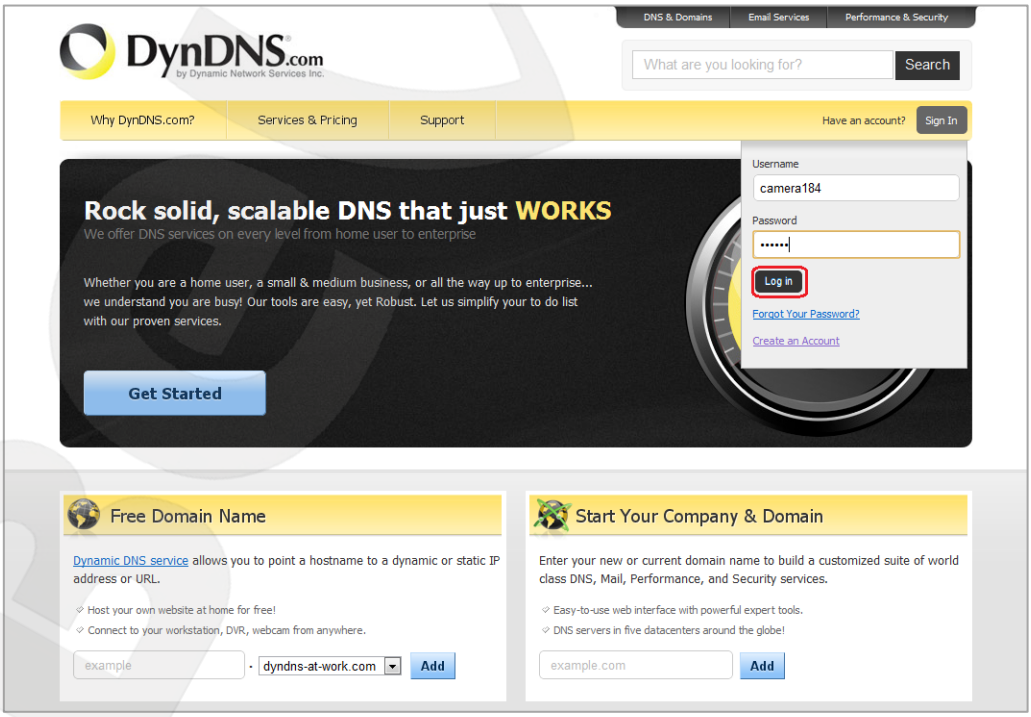
Step 5: your DynDNS account is created (*Pic. 7.17*).



Pic. 7.17

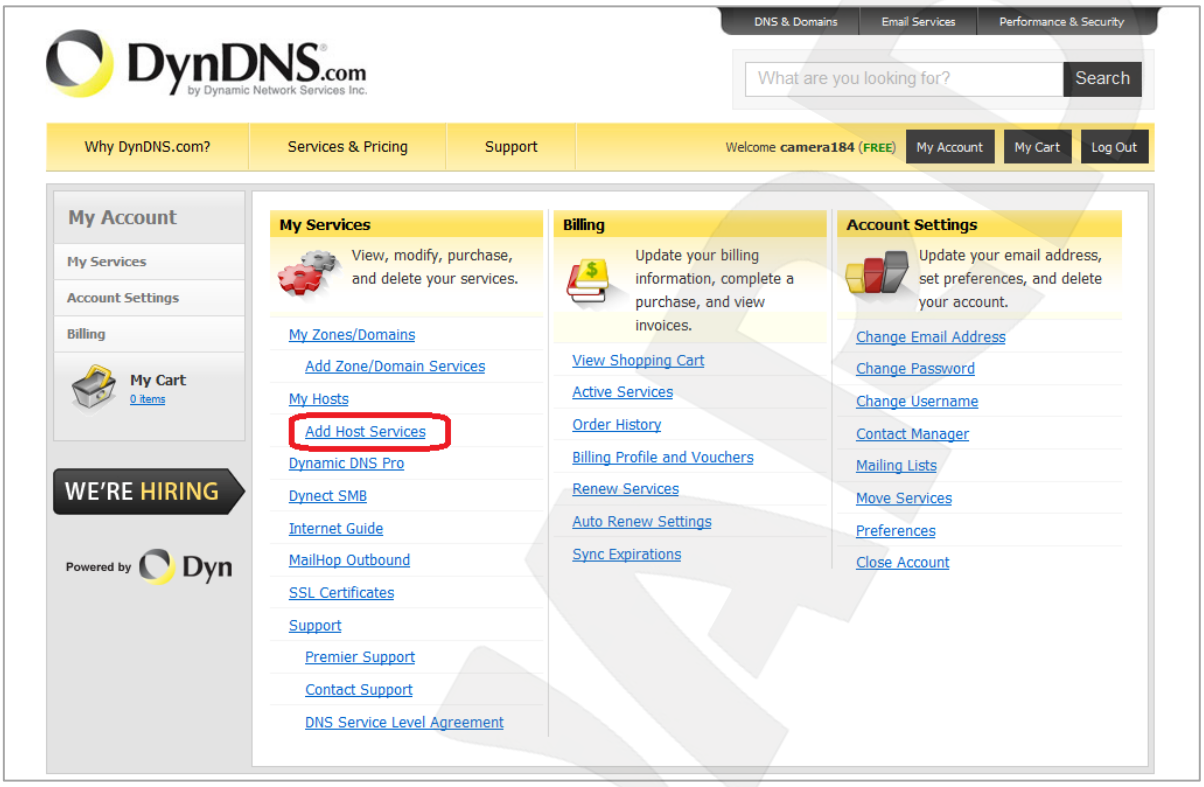
7.4.3. Creating a Domain Name at DynDNS

Step 1: open your browser, go to www.dyndns.com and log in with your username and your password. To do so, click the **[Sign In]** button in the upper right corner and enter your username in the **[Username]** field and your password in the **[Password]** field, then click the **[Log In]** button (*Pic. 7.18*).


DynDNS.com
by Dynamic Network Services Inc.
DNS & Domains
Email Services
Performance & Security
What are you looking for?
Search
Why DynDNS.com?
Services & Pricing
Support
Have an account?
Sign In
Rock solid, scalable DNS that just WORKS
We offer DNS services on every level from home user to enterprise
Whether you are a home user, a small & medium business, or all the way up to enterprise... we understand you are busy! Our tools are easy, yet Robust. Let us simplify your to do list with our proven services.
Get Started
Username
camera184
Password
Log in
Forgot Your Password?
Create an Account
Free Domain Name
Dynamic DNS service allows you to point a hostname to a dynamic or static IP address or URL.
Host your own website at home for free!
Connect to your workstation, DVR, webcam from anywhere.
example
dyndns-at-work.com
Add
Start Your Company & Domain
Enter your new or current domain name to build a customized suite of world class DNS, Mail, Performance, and Security services.
Easy-to-use web interface with powerful expert tools.
DNS servers in five datacenters around the globe!
example.com
Add

Pic. 7.18

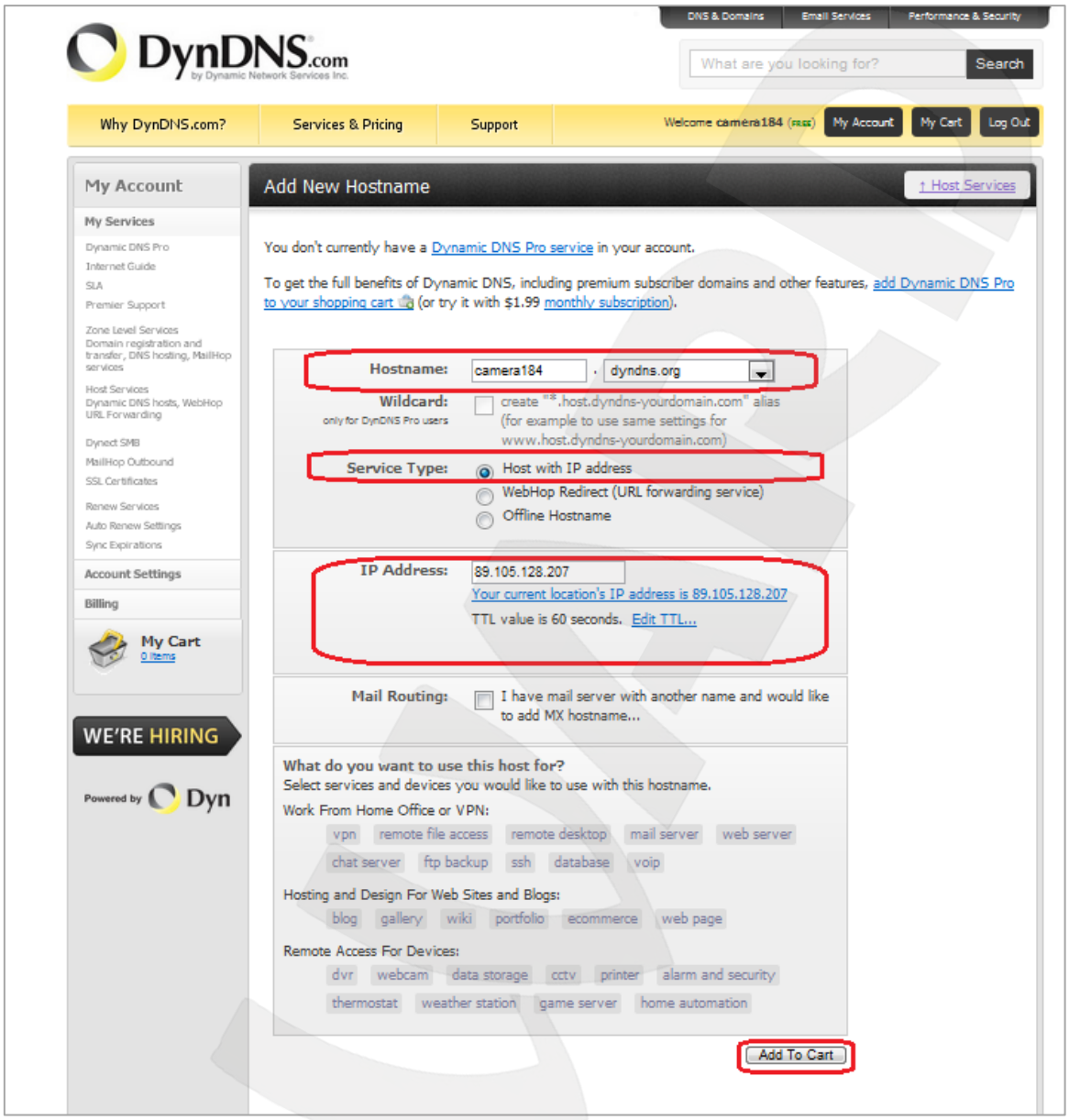
Step 2: if the username and password are correct, you will see your account settings page. To continue, click the **[Add Host Services]** (*Pic. 7.19*).



Pic. 7.19

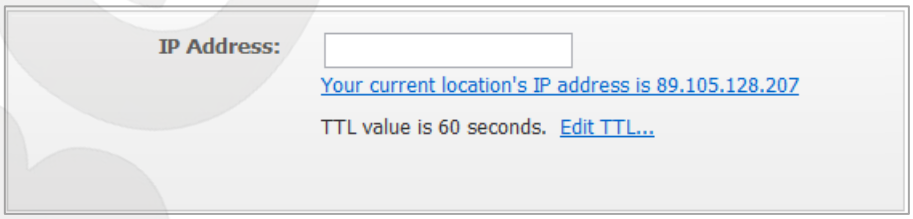
Step 3: in the opened page, configure the connection settings. Select a domain. For this example, we use dyndns.org.

In the **[Hostname]** field, enter a domain name for you camera (e.g. camera184). If the domain name is available, the camera will be accessible at camera184.dyndns.org (*Pic. 7.20*).



Pic. 7.20

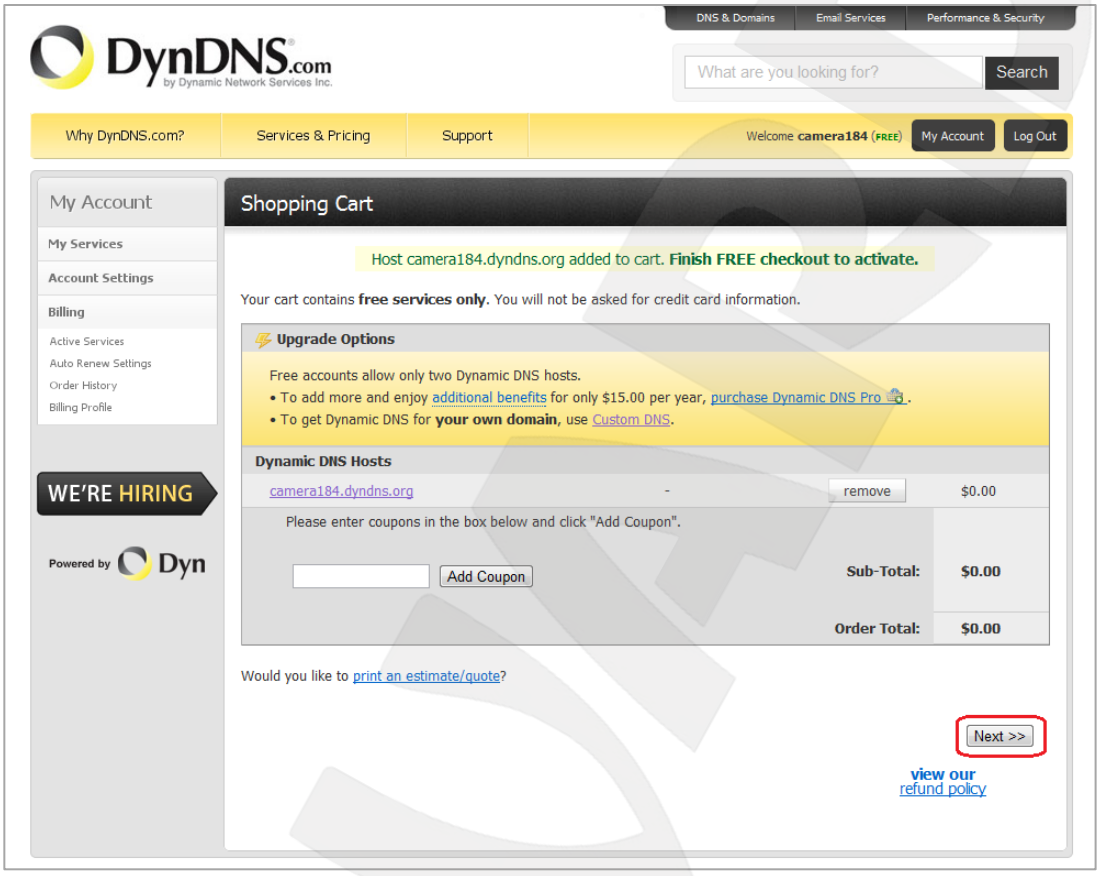
To tie the current IP address of your camera to the specified domain name, please enter its IP address in the **[IP address field]**. By default, DynDNS service determines the IP address from which you are connecting to the service (*Pic. 7.21*).



Pic. 7.21

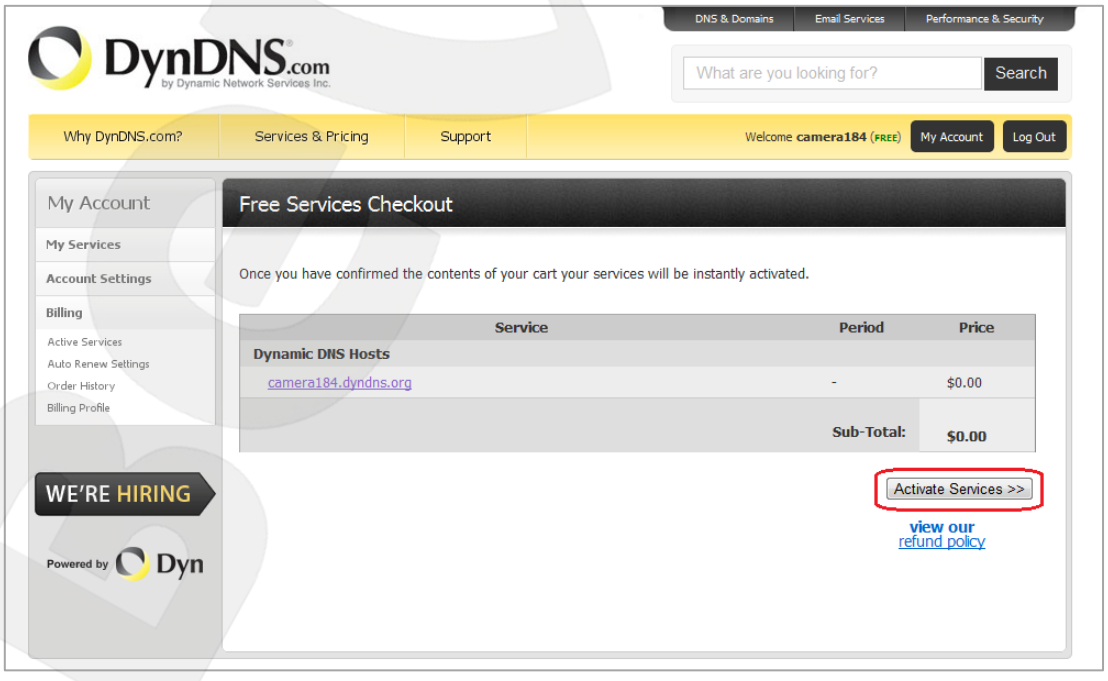
Enter the IP address assigned by your ISP and click the **[Add To Cart]** button.

Step 4: if the domain name is created successfully, you will see the confirmation page. In the provided example, camera184.dyndns.org domain name is created. To activate your domain name, click **[Next]** (*Pic. 7.22*).



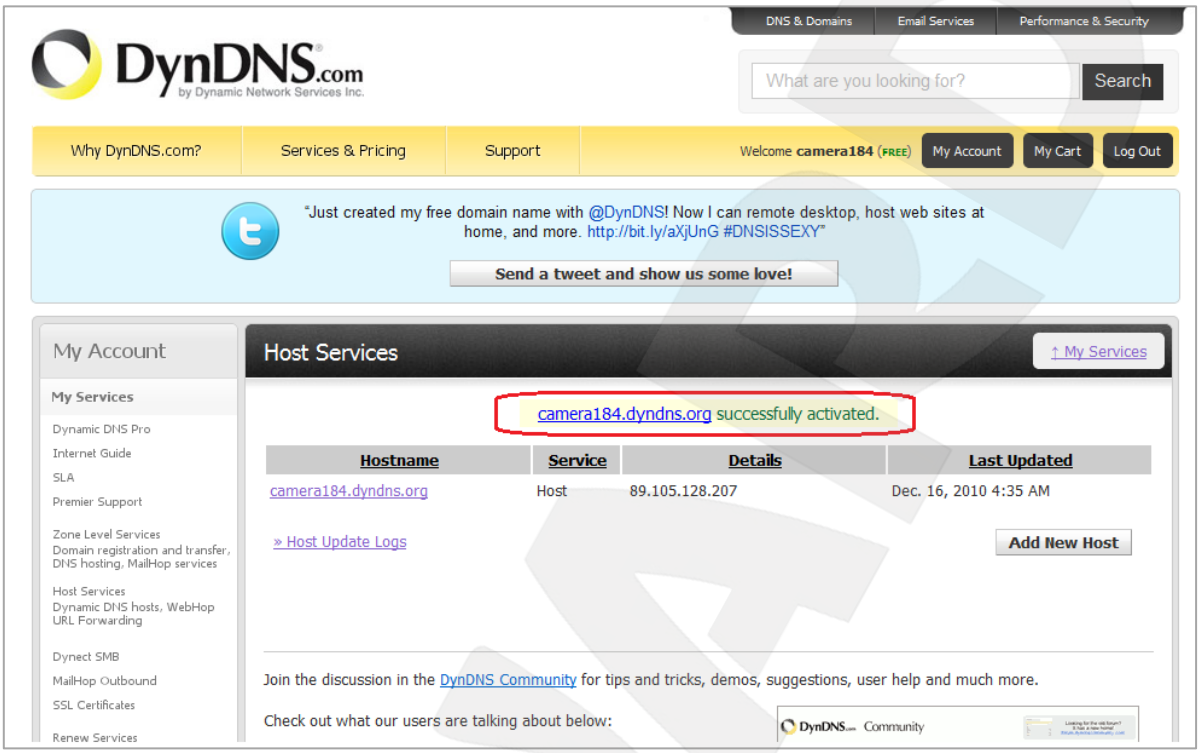
Pic. 7.22

In the opened page, click the **[Activate Service]** button (*Pic. 7.23*).



Pic. 7.23

Step 5: if your domain name is activated successfully, you will see the confirmation page (*Pic. 7.24*).



Pic. 7.24

Step 6: your domain name is created.

7.4.4. Setting up the Equipment to Work with DynDNS

After the previous steps are completed, you need to set up your camera according to your registration details at DynDNS service (see paragraph 7.4.2, 7.4.3).

The IP camera and a router (in case if you camera is connected to the Internet through a router) can both update the IP address at DynDNS server.

To set up your camera to work with DynDNS service, please follow the steps below:

IMPORTANT!

Your camera must be connected to the Internet directly.

Step 1: enable the **[DDNS]** option at ***SETTING – Basic – Network – DDNS***.

Step 2: select a DDNS provider in the **[Server name]**.

Step 3: enter the username that you chose at registration in the **[User ID]**.

Step 4: enter the password that you chose at registration in the **[Password]**.

Step 5: re-type the password in the **[Re-type password]**.

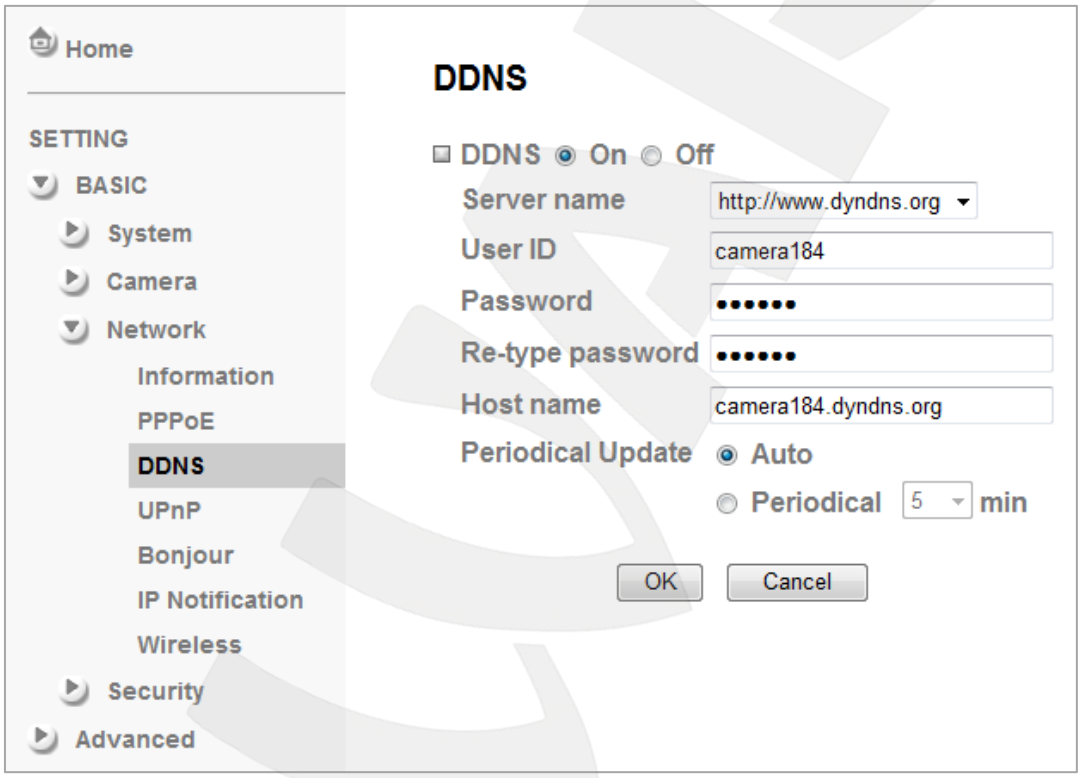
Step 6: enter the domain name that you chose at registration in the **[Host name]**.

IMPORTANT!

For detailed information on how to configure the camera through the web interface, please refer to the Operations user manual.

According to the registration details that were specified at DynDNS server (see paragraph 7.4.2, 7.4.3), select “www.dyndns.org” in the **[Server name]** field. Enter “camera184” in the **[User ID]** and “123456” in the **[Password]**. Enter “camera184.dyndns.org” in the **[Host name]** (*Pic. 7.25*).

Step 7: click **[OK]** to save the changes.



Pic. 7.25

IMPORTANT!

After you configure the network settings, you must reboot the camera.

IMPORTANT!

If a host is not updated within 35 days, it will be removed from the system.

Step 8: the camera configuration is completed.

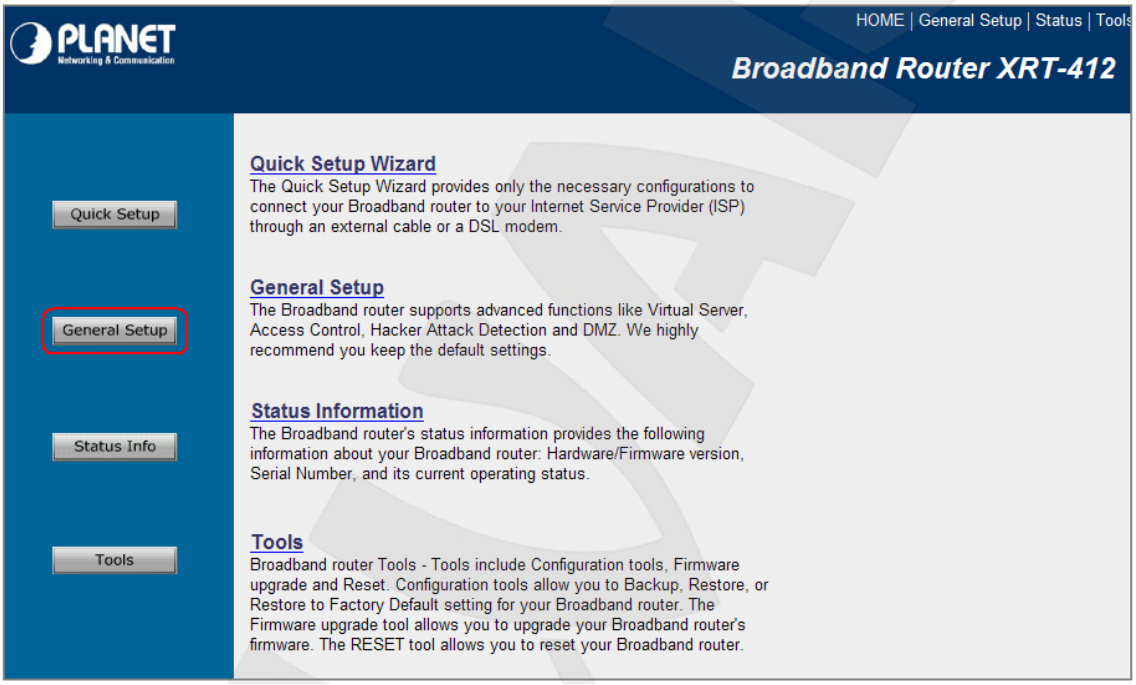
Let’s consider an example of setting up DDNS on a router by configuring Planet XRT-401D. Routers of other manufacturers are configured identically; please refer to the router’s manual for

more information on how to configure DDNS. The router is configured to work with DynDNS as follows:

IMPORTANT!

Make sure your router supports DDNS, is connected to the Internet and configured properly.

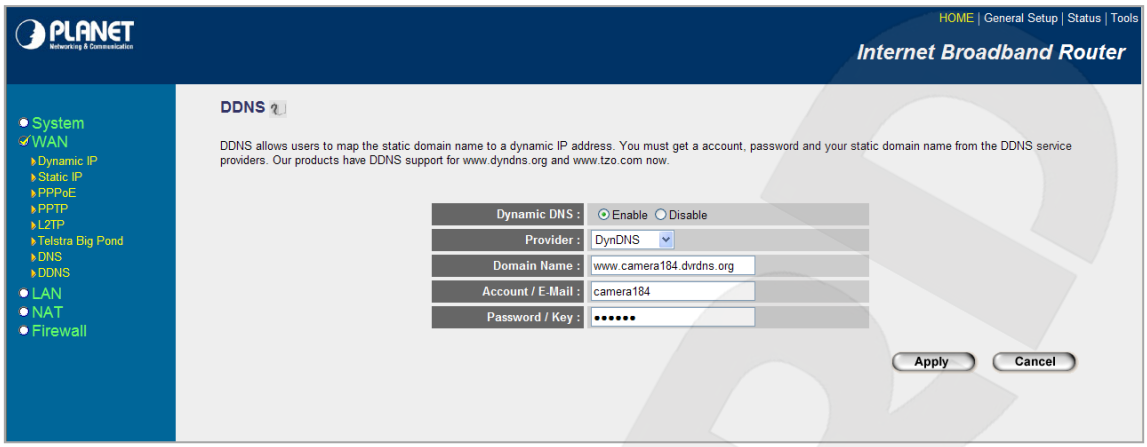
Step 1: enter the IP address of your router in the browser address field. In the appeared window, enter your username and your password. After successful authorization, the router settings page appears. Click the **[General Setup]** (*Pic. 7.26*).


PLANET
Networking & Communication
HOME | General Setup | Status | Tools
Broadband Router XRT-412
Quick Setup
General Setup
Status Info
Tools
Quick Setup Wizard
The Quick Setup Wizard provides only the necessary configurations to connect your Broadband router to your Internet Service Provider (ISP) through an external cable or a DSL modem.
General Setup
The Broadband router supports advanced functions like Virtual Server, Access Control, Hacker Attack Detection and DMZ. We highly recommend you keep the default settings.
Status Information
The Broadband router's status information provides the following information about your Broadband router: Hardware/Firmware version, Serial Number, and its current operating status.
Tools
Broadband router Tools - Tools include Configuration tools, Firmware upgrade and Reset. Configuration tools allow you to Backup, Restore, or Restore to Factory Default setting for your Broadband router. The Firmware upgrade tool allows you to upgrade your Broadband router's firmware. The RESET tool allows you to reset your Broadband router.

Pic. 7.26

Step 2: click the **[DDNS]** in the opened menu. Click the **[Enable]** to enable the DDNS option.

Step 3: according to the registration details that were specified at DynDNS server (see paragraph 7.4.2, 7.4.3), select “www.dyndns.org” in the **[Provider]** field. Enter “camera184.dyndns.org” in the **[Domain Name]**, enter “camera184” in the **[Account / E-Mail]** and “123456” in the **[Password / Key]** field (*Pic. 7.27*).



Pic. 7.27

IMPORTANT!

Make sure you have entered the valid data; otherwise, your router will not be able to connect to the DDNS server.

Step 4: click the **[Apply]** to save the changes.

Step 5: the router configuration is completed.

If everything is configured correctly, your camera will be available from anywhere in the world and accessible under the unique name that is easy to remember. From now on, you need to enter http://camera184.dyndns.org in your browser address field to access your camera and if everything was done correctly, you should see the camera main window.

Appendix

Appendix A. Port Values

Port	Default Value	Range of Values
HTTP	**80**	**1124..65535**
HTTP forwarding via UPnP	**80**	**1024..65535**
HTTPS forwarding via UPnP	**443**	**1024..65535**
RTSP	**554**	**1124..65535**
RTSP forwarding via UPnP	**554**	**1024..65535**
RTP start port	**5000**	**1124..65516**
RTP end port	**7999**	**1143..65535**
Multicast video port	**-**	**1124..65534**
Multicast audio port	**-**	**1124..65534**
SMTP	**25**	**1..65535**
System log remote server port	**514**	**1..65535**
Event server port	**80**	**1..65535**
Proxy port	**-**	**1..65535**
Motion detection	**1999**	**-**
MPEG4 (HTTP) stream	**80**	**1024..65535**
MJPEG (HTTP) stream	**80**	**1024..65535**
MPEG4 (HTTP SSL) stream	**8091**	**1024..65535**
MJPEG (HTTP SSL) stream	**8071**	**1024..65535**

Appendix B. Factory Defaults

This table provides camera factory defaults

Parameter	Value
IP address	**192.168.0.99**
Subnet mask	**255.255.255.0**
Gateway	**192.168.0.1**
Username (administrator)	**admin**
Password (administrator)	**admin**
HTTP port	**80**
RTSP port	**554**
SMTP port	**25**

Appendix C. Glossary

3GP (3GPP file format) is a multimedia container format defined by the Third Generation Partnership Project (3GPP) for 3G UMTS multimedia services. It is used on 3G mobile phones but can also be played on some 2G and 4G phones.

ActiveX is a standard that enables software components to interact with one another in a networked environment, regardless of the language(s) used to create them. Web browsers may come into contact with ActiveX controls, ActiveX documents, and ActiveX scripts. ActiveX controls are often downloaded and installed automatically as required.

Asymmetric Digital Subscriber Line (ADSL) is an obsolete type of Digital Subscriber Line technology, a data communications technology that enables faster data transmission over copper telephone lines than a conventional voiceband modem can provide.

Angle is the field of view, relative to a standard lens in a 35mm still camera, expressed in degrees, e.g. 30°. For practical purposes, this is the area that a lens can cover, where the angle of view is determined by the focal length of the lens. A wide-angle lens has a short focal length and covers a wider angle of view than standard or telephoto lenses, which have longer focal lengths.

ARP (Address Resolution Protocol) is used to associate an IP address to a hardware MAC address. A request is broadcast on the local network to discover the MAC address for an IP address.

Aspect ratio is a ratio of width to height in images. A common aspect ratio used for television screens and computer monitors is 4:3. High-definition television (HDTV) uses an aspect ratio of 16:9.

Authentication is the process of identifying an individual, usually based on a username and password. In security systems, authentication is distinct from authorization, which is the process of giving individuals access to system objects based on their identity. Authentication merely ensures that the individual is who he or she claims to be, but says nothing about the access rights of the individual.

Autoiris (or DC-Iris).This special type of iris is electrically controlled by the camera, to automatically regulate the amount of light allowed to enter.

Bit rate: (in kbit/s or Mbit/s) is often referred to as speed, but actually defines the number of bits/time unit and not distance/time unit.

Backlight Compensation compensates for strong backlighting, so that subjects appear clearly instead of as silhouettes.

Bonjour, also known as zero-configuration networking, Bonjour enables automatic discovery of computers, devices, and services on IP networks. Bonjour allows devices to automatically discover each other without the need to enter IP addresses or configure DNS servers. Bonjour is developed by Apple Computer Inc.

CCD (Charged Coupled Device). This light-sensitive image device used in many digital cameras is a large integrated circuit that contains hundreds of thousands of photo-sites (pixels) that convert light energy into electronic signals. Its size is measured diagonally and can be 1/4", 1/3", 1/2" or 2/3".

CGI (Common Gateway Interface) is a specification for communication between a web server and other (CGI) programs. For example, a HTML page that contains a form might use a CGI program to process the form data once it is submitted.

Classless Inter Domain Routing (CIDR) is a method for assigning IP addresses without using the standard IP address classes like Class A, Class B or Class C. In CIDR notation, an IP address is represented as A.B.C.D /n, where "/n" is called the IP prefix or network prefix. The IP prefix identifies the number of significant bits used to identify a network. For example, 192.9.205.22 /18 means, the first 18 bits are used to represent the network and the remaining 14 bits are used to identify hosts. Common prefixes are 8, 16, 24, and 32.

Complementary metal–oxide–semiconductor (CMOS) is a technology for constructing integrated circuits. CMOS technology is used in microprocessors, microcontrollers, static RAM, and other digital logic circuits. CMOS technology is also used for several analog circuits such as image sensors (CMOS sensor), data converters, and highly integrated transceivers for many types of communication.

Dynamic DNS is a method/protocol/network service that provides the capability for a networked device, such as a router or computer system using the Internet Protocol Suite, to notify a Domain Name System (DNS) name server to change, in real time, the active DNS configuration of its configured hostnames, addresses or other information.

DHCP (Dynamic Host Configuration Protocol) is a protocol that lets network administrators automate and centrally manage the assignment of Internet Protocol (IP) addresses to network devices in a network. DHCP uses the concept of a "lease" or amount of time that a given IP address will be valid for a computer. The lease time can vary, depending on how long a user is likely to require the network connection at a particular location. DHCP also supports static addresses for e.g. computers running web servers, which need a permanent IP address.

Digital zoom is a method of decreasing (narrowing) the apparent angle of view of a digital photographic or video image. Digital zoom is accomplished by cropping an image down to a centered area with the same aspect ratio as the original, and usually also interpolating the result back up to the pixel dimensions of the original. It is accomplished electronically, with no adjustment of the camera's optics, and no optical resolution is gained in the process.

Domain server can also be used by organizations that wish to centralize the management of their (Windows) computers. Each user within a domain has an account that usually allows them to log in to and use any computer in the domain, although restrictions may also apply. The domain server is the server that authenticates the users on the network.

Ethernet is the most widely installed local area network technology. An Ethernet LAN typically uses special grades of twisted pair wires. The most commonly installed Ethernet systems are 10BASE-T and 100BASE-T10, which provide transmission speeds up to 10 Mbps and 100 Mbps respectively.

Factory default settings are the settings that originally applied for a device when it was first delivered from the factory. If it should become necessary to reset a device to its factory default settings, this will, for many devices, completely reset any settings that were changed by the user.

Firewall works as a barrier between networks, e.g. between a Local Area Network and the Internet. The firewall ensures that only authorized users are allowed to access the one network from the other. A firewall can be software running on a computer, or it can be a standalone hardware device.

Focal length is measured in millimeters; the focal length of a camera lens determines the width of the horizontal field of view, which in turn is measured in degrees.

FPS (frames per second) a measure of how much information is used to store and display motion video. The term applies equally to film video and digital video. Each frame is a still image; displaying frames in quick succession creates the illusion of motion. The more frames per second (fps), the smoother the motion appears.

Frame is a complete video image. In the 2:1 interlaced scanning format of the RS-170 and CCIR formats, a frame is made up of two separate fields of 262.5 or 312.5 lines interlaced at 60 or 50 Hz to form a complete frame, which appears at 30 or 25 Hz. In video cameras with a progressive scan, each frame is scanned line-by-line and not interlaced; most are also displayed at 30 and 25 Hz.

FTP (File Transfer Protocol) is an application protocol that uses the TCP/IP protocols, used to exchange files between computers/devices on networks.

Full-duplex means transmission of data in two directions simultaneously. In an audio system this would describe e.g. a telephone system. Half-duplex also provides bi-directional communication, but only in one direction at a time, as in a walkie-talkie system.

G.711 is the default pulse code modulation (PCM) standard for Internet Protocol (IP) private branch exchange (PBX) vendors, as well as for the public switched telephone network (PSTN). G.711 digitizes analog voice signals producing output at 64 kilobits per second (Kbps).

Gain is the amplification factor and the extent to which an analog amplifier boosts the strength of a signal. Amplification factors are usually expressed in terms of power. The decibel (dB) is the most common way of quantifying the gain of an amplifier.

Gateway is a point in a network that acts as an entry point to another network. In a corporate network for example, a computer server acting as a gateway often also acts as a proxy server and a firewall server. A gateway is often associated with both a router, which knows where

to direct a given packet of data that arrives at the gateway, and a switch, which furnishes the actual path in and out of the gateway for a given packet.

HTTP (Hypertext Transfer Protocol) is the set of rules for exchanging files (text, graphic images, sound, video, and other multimedia files) on the web. The HTTP protocol runs on top of the TCP/IP suite of protocols.

HTTPS (Hypertext Transfer Protocol over SSL) is a web protocol used by browsers and web servers to encrypt and decrypt user page requests and the pages returned by the server.The encrypted exchange of information is governed by the use of an HTTPS certificate (issued by a Certificate Authority), which guarantees the authenticity of the server.

Hub is used to connect multiple devices to the network. The hub transmits all data to all devices connected to it, whereas a switch will only transmit the data to the device it is specifically intended for.

ICMP is a network protocol useful in Internet Protocol (IP) network management and administration. ICMP is a required element of IP implementations. ICMP is a control protocol, meaning that it does not carry application data, but rather information about the status of the network itself.

IEEE 802.11 is a family of standards for wireless LANs. The 802.11 standard supports 1 or 2 Mbit/s transmission on the 2.4 GHz band. IEEE 802.11b supports data rates up to11 Mbit/s on the 2.4 GHz band, while 802.11g allows up to 54 Mbit/s on the 5 GHz band.

Interlacing. Interlaced video is video captured at 50 pictures (known as fields) per second, of which every 2 consecutive fields (at half height) are then combined into 1 frame. Interlacing was developed many years ago for the analog TV world and is still used widely today. It provides good results when viewing motion in standard TV pictures, although there is always some degree of distortion in the image.

Internet Explorer (formerly Microsoft Internet Explorer, commonly abbreviated IE or MSIE) is a series of graphical web browsers developed by Microsoft and included as part of the Microsoft Windows line of operating systems, starting in 1995.

IP66 is a two digit number developed by the international electrical Commission, and is used to provide Ingress Protection (IP) rating to a piece of electronic equipment or to an enclosure for electronic equipment. The Ingress protection code indicates the level and amount of protection. The first digit means no ingress of dust; complete protection against contact. The second digit means water projected in powerful jets (12.5mm nozzle) against the enclosure from any direction shall have no harmful effects.

IP camera. The terms IP camera, network camera and Internet camera all refer to the same thing - a camera and computer combined in one unit. It operates as stand-alone unit and only requires a connection to the network.

JPEG (Joint Photographic Experts Group).Together with the GIF file format, JPEG is an image file type commonly used on the web. A JPEG image is a bitmap, and usually has the file extension '.jpg' or ".jpeg." When creating a JPEG image, it is possible to configure the level of compression to use. As the lowest compression (i.e. the highest quality) results in the largest file, there is a trade-off between image quality and file size.

kbit/s (kilobits per second) is a measure of the bit rate, i.e. the rate at which bits are passing a given point. See also Bit rate.

LAN (Local Area Network) is a group of computers and associated devices that typically share common resources within a limited geographical area.

Lux is a standard unit of illumination measurement.

MAC address (Media Access Control address) is a unique identifier associated with a piece of networking equipment, or more specifically, its interface with the network. For example, the network card in a computer has its own MAC address.

Mbit/s (Megabits per second) is a measure of the bit rate, i.e. the rate at which bits are passing a given point. Commonly used to give the "speed" of a network. A LAN might run at 10 or 100 Mbit/s.

Motion JPEG is a simple compression/decompression technique for network video. Latency is low and image quality is guaranteed, regardless of movement or complexity of the image. Image quality is controlled by adjusting the compression level, which in turn provides control over the file size, and thereby the bit rate.

MPEG-4 is a group of audio and video coding standards and related technology. The primary uses for the MPEG-4 standard are web (streaming media) and CD distribution, conversational (videophone), and broadcast television. Most of the features included in MPEG-4 are left to individual developers to decide whether to implement them or not. This means that there are probably no complete implementations of the entire MPEG-4 set of standards. To deal with this, the standard includes the concept of "profiles" and "levels", allowing a specific set of capabilities to be defined in a manner appropriate for a subset of applications.

Multicast is a bandwidth-conserving technology that reduces bandwidth usage by simultaneously delivering a single stream of information to multiple network recipients.

Network Time Protocol (NTP) is a protocol for synchronizing the clocks of computer systems over packet-switched, variable-latency data networks. It is designed particularly to resist the effects of variable latency by using a jitter buffer.

NTSC (National Television System Committee) is an analog color encoding system used in television systems in Japan, the United States and other parts of the Americas. NTSC defines the video signal using 525 TV lines per frame, at a refresh rate equal to 30 frames per second. See also PAL.

ONVIF (Open Network Video Interface Forum) is a global and open industry forum with the goal to facilitate the development and use of a global open standard for the interface of physical IP-based security products. Or in other words, to create a standard for how IP products within video surveillance and other physical security areas can communicate with each other. ONVIF is an organization started in 2008 by Axis Communications, Bosch Security Systems and Sony.

PAL (Phase Alternating Line) is an analog color encoding system used in television systems in Europe and in many other parts of the world. PAL defines the video signal using 625 TV lines per frame, at a refresh rate equal to 25 frames per second.

Power over Ethernet or PoE provides power to a network device via the same cable as used for the network connection. This is very useful for IP-Surveillance and remote monitoring applications in places where it may be too impractical or expensive to power the device from a power outlet.

PPP (Point-to-Point Protocol) is a protocol that uses a serial interface for communication between two network devices. For example, a PC connected by a phone line to a server.

Point-to-Point Protocol over Ethernet (PPPoE) is a network protocol for encapsulating Point-to-Point Protocol (PPP) frames inside Ethernet frames. It is used mainly with DSL services where individual users connect to the DSL modem over Ethernet and in plain Metro Ethernet networks.

Progressive scan, as opposed to interlaced video, scans the entire picture, line by line every sixteenth of a second. In other words, captured images are not split into separate fields as in interlaced scanning.

Jack-45 is an eight-wire connector used to connect computers onto a local-area networks (LAN), especially Ethernets. RJ-45 connectors look similar to the RJ-11 connectors used for connecting telephone equipment, but they are a bit wider.

Router is a device that determines the next network point to which a packet should be forwarded on its way to its final destination. A router creates and/or maintains a special routing table that stores information on how best to reach certain destinations. A router is sometimes included as part of a network switch.

RTP is an Internet protocol for the transport of real-time data, e.g. audio and video. It can be used for media-on-demand as well as interactive services such as Internet telephony.

RTSP (Real Time Streaming Protocol) is a control protocol, and a starting point for negotiating transports such as RTP, multicast and Unicast, and for negotiating codecs.

RTSP can be considered a “remote control” for controlling the media stream delivered by a media server. RTSP servers typically use RTP as the protocol for the actual transport of audio/video data.

Shutter is the device on the camera that opens and closes to control how long the focal plane is exposed to light.

SMTP is used for sending and receiving e-mail. However, as it is "simple," it is limited in its ability to queue messages at the receiving end, and is usually used with one of two other protocols, POP3 or IMAP. These other protocols allow the user to save messages in a server mailbox and download them periodically from the server.

SMTP authentication is an extension of SMTP, whereby the client is required to log into the mail server before or during the sending of email. It can be used to allow legitimate users to send email while denying the service to unauthorized users, such as spammers.

SSL/TLS (Secure Socket Layer/Transport Layer Security). These two protocols (SSL is succeeded by TLS) are cryptographic protocols that provide secure communication on a network. SSL is commonly used over HTTP to form HTTPS, as used e.g. on the Internet for electronic financial transactions. SSL uses public key certificates to verify the identity of the server.

Subnet & subnet mask is an identifiably separate part of an organization's network. Typically, a subnet may represent all the machines at one geographic location, in one building, or on the same local area network (LAN). Having an organization's network divided into subnets allows it to be connected to the Internet with a single shared network address. The subnet mask is the part of the IP address that tells a network router how to find the subnet that the data packet should be delivered to. Using a subnet mask saves the router having to handle the entire 32-bit IP address; it simply looks at the bits selected by the mask.

Switch is a network device that connects network segments together, and which selects a path for sending a unit of data to its next destination. In general, a switch is a simpler and faster mechanism than a router, which requires knowledge about the network and how to determine the route. Some switches include the router function.

TCP is used along with the Internet Protocol (IP) to transmit data as packets between computers over the network. While IP takes care of the actual packet delivery, TCP keeps track of the individual packets that the communication (e.g. requested a web page file) is divided into, and, when all packets have arrived at their destination, it reassembles them to re-form the complete file.

TCP is a connection-oriented protocol, which means that a connection is established between the two end-points and is maintained until the data has been successfully exchanged between the communicating applications.

Time to live (TTL) is mechanism that limits the lifespan of data in a computer or network. TTL may be implemented as a counter or timestamp attached to or embedded in the data. Once the prescribed event count or timespan has elapsed, data is discarded. In computer networking, TTL prevents a data packet from circulating indefinitely. In computing applications, TTL is used to improve performance of caching or improve privacy.

UDP is a communications protocol that offers limited service for exchanging data in a network that uses the Internet Protocol (IP). UDP is an alternative to the Transmission Control Protocol (TCP). The advantage of UDP is that it is not required to deliver all data and may drop network packets when there is e.g. network congestion. This is suitable for live video, as there is no point in re-transmitting old information that will not be displayed anyway.

Universal Plug and Play (UPnP) is a set of networking protocols for primarily residential networks without enterprise class devices that permits networked devices, such as personal computers, printers, Internet gateways, Wi-Fi access points and mobile devices to seamlessly discover each other's presence on the network and establish functional network services for data sharing, communications, and entertainment.

Uniform Resource Locator or Unified Resource Locator (URL) is a character string that specifies where a known resource is available on the Internet and the mechanism for retrieving it.

Wireless Application Protocol (WAP) is a technical standard for accessing information over a mobile wireless network. A WAP browser is a web browser for mobile devices such as mobile phones (called "cellular phones" in some countries) that uses the protocol.

Web server is a program, which allows Web browsers to retrieve files from computers connected to the Internet. The Web server listens for requests from Web browsers and upon receiving a request for a file sends it back to the browser.

The primary function of a Web server is to serve pages to other remote computers; consequently, it needs to be installed on a computer that is permanently connected to the Internet. It also controls access to the server whilst monitoring and logging server access statistics.

Wireless LAN is a wireless local area network that uses radio waves as its carrier: where the network connections for end-users are wireless. The main network structure usually uses cables.